Annex

REPORT OF THE TASK FORCE ON EXTERNAL LIGHTING

April 2015

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1: Introduction

1. To address the public concerns about the light nuisance and energy wastage problems that may be caused by external lighting installations, the Environment Bureau (ENB) set up the Task Force on External Lighting (the Task Force) in August 2011 to advise it the appropriate strategy and measures to tackle nuisance and energy wastage problems caused by external lighting. Members of the Task Force are drawn from a wide cross section of the community, including professional bodies, relevant trades, the academic community and green groups. The Membership and Terms of Reference of the Task Force are at **Annex A**.

2. The Task Force focuses on the following issues:

(a) **light nuisance** caused by external lighting to residents nearby, usually as a result of strong, sometimes flashy, light; long operating hours and proximity to light sensitive receivers, etc.; and

(b) **energy wastage** due to excessive light intensity, use of inefficient lighting installations and long operating hours.

3. The Task Force has studied thoroughly the technical standards and parameters as well as implementation approaches adopted by overseas regulatory regimes in tackling the problems of energy wastage and nuisance caused by external lighting. Apart from document-based studies and discussion meetings among members, the Task Force visited districts where external lighting complaints were prominent, including Causeway Bay, Mong Kok, Tsim Sha Tsui and Wan Chai to assess the applicability of the overseas regulatory standards and parameters to Hong Kong.

4. Having thoroughly studied and discussed the technical issues associated with the regulation of external lighting, the Task Force came to the conclusion that the requirement to switch off lighting installations of decorative, promotional or advertising purposes that affect the outdoor environment, regardless of whether the lighting installations are interior or exterior, would be the appropriate way forward for Hong Kong. It is relatively straight forward and is easier to implement. It

should to a large extent mitigate the possible light nuisance problems and minimise energy wastage, and will unlikely affect the normal business operations if the preset time can tie in with their operational need. The Task Force considers that the switch-off requirement represents an appropriate balance between the need to preserve the spectacular night scene of Hong Kong on the one hand, and the need to minimise the adverse impact of external lighting on our daily lives on the other.

5. The Task Force is aware that the issue of external lighting is a complicated one, and attracts a wide range of responses from different sectors of the community. To understand and assess the impact on stakeholders and the public before making a final recommendation, the Task Force conducted a public engagement exercise from August to November 2013 to invite views on the following issues relating to the proposed switch-off requirement:

(a) scope of the switch-off requirement –
  (i) lighting of decorative, promotional or advertising purposes affecting the outdoor environment (such as shop signs, video walls and façade lighting), regardless of whether the lighting installations are interior or exterior;
  (ii) exclude lighting necessary for security, safety or operational purposes, such as road/street lighting, lighting at airport and container port, construction sites and buildings undergoing major retrofitting works, etc.;

(b) exemptions to be granted, initial proposals include –
  (i) shop-front signs of shops that are in operation after the preset time;
  (ii) decorative lighting (static and non-static) during festive seasons two nights/early mornings before the respective statutory holidays of Christmas, New Year and Lunar New Year until the morning of the day following the holidays;
  (iii) no exemption to be granted to non-static signs, except for decorative lighting during designated festive holidays;

(c) the appropriate preset time –
  (i) 11:00 p.m. to 7:00 a.m.; or
  (ii) 12:00 midnight to 7:00 a.m.; and

(d) implementation approach –
  (i) mandatory regulation to be preceded by a charter scheme; or
  (ii) implement a charter scheme first and consider legislation in the light of the outcome of the charter scheme.

The Engagement Document is at **Annex B**.

2: Outcome of the Engagement Exercise

6. The engagement exercise was conducted from 19 August 2013 to 18 November 2013. The Task Force received a total of 102 written submissions from various sectors of the community, including District Councils (DCs), Area Committees (ACs), green groups, professional bodies, trade associations, political parties and individuals during the three-month engagement exercise.

7. To encourage members of the public to conduct more in-depth discussions on the issue of external lighting, the Task Force organised one public forum on 31 August 2013. Open invitations to the public forum were published on two Chinese newspapers and one English newspaper. Invitations were also issued to 18 DCs, some 30 Rural Committees and over 60 ACs to invite their members to participate in the public forum. The public forum was attended by around 50 participants.

8. The Task Force organised two engagement sessions for stakeholder groups. Invitations were issued to trade associations, green groups, tourism industry, professional bodies, property-related associations, etc. The list of organisations that were invited to the two engagement sessions is at **Annex C**. The two engagement sessions on 28 August and 5 September 2013 attracted about 20 and 30 participants respectively. In addition, the Task Force attended 14 meetings to invite views from six DCs or their sub-committees where external lighting had been the subject of complaints, six Government advisory committees and two trade bodies. A list of the 17 meetings is at **Annex D**.

9. The number of written submissions received and the number of participants in the engagement meetings are relatively small, which has rendered any quantitative analysis of the submissions unsuitable. Notwithstanding this, the written submissions and the discussions at the engagement session have provided a substantial amount of views and comments that can facilitate the development of well-informed recommendations.

In this context, the Task Force has conducted a qualitative analysis of the views collected and the reasons for those views as provided by the respondents.

10. The purpose of this report is to set out the views and suggestions from the respondents during the engagement exercise, as well as the Task Force's recommendations to the Government on the appropriate measures to tackle the light nuisance and energy wastage problems caused by external lighting installations. The relatively small number of submissions may reflect to certain extent the amount of interest or the level of attention that the general public has given to the subject. On the other hand, among the submissions received, the diversity of views was considerable. Most of the respondents have strong views on the appropriate ways to tackle the problems associated with external lighting, ranging from calls for immediate legislation to fundamental objection to any form of regulation, including voluntary measures. Therefore, when formulating its recommendations, the Task Force has to carefully analyse the views from different respondents, having regard to the fact that strong sentiments were expressed by respondents with different views and that such sentiments have yet to be shared by the wider community.

General Comments received during the Engagement Exercise

11. The responses collected during the engagement exercise reflected a wide spectrum of opinions across various sectors of the community. In general, most respondents agreed that when considering the possible measures, including the switch-off requirement, to tackle the problems of external lighting, a careful balance should be struck between the need to provide residents with an environment conducive to sleep, and the operational need of the business sector as well as the need to sustain a vibrant image of Hong Kong. In fact, the majority of the respondents, regardless of whether they support or object to the switch-off requirement, were concerned about the possible impact on Hong Kong's night scene, the business environment, and even public safety and crime rates as a result of the darkening of the city after the preset time.

12. The respondents' views on the appropriate measures to regulate external lighting installations were too diverse to develop any majority views. Some respondents considered the proposed switch-off requirement would help regulate external lighting and provide a better sleep environment for the residents concerned. They believed that the switch-off requirement

was preferable to the regulation of luminance level. Some respondents also called for legislation on the ground that some lighting installation owners would not respond to residents' complaints unless they are required by the law to do so.

13. On the other hand, a considerable number of respondents held opposing views. They stressed that Hong Kong was not suburbia but a metropolitan city known as the "Pearl of Orient" with its vibrant image and captivating night scene. They worried that this important icon of Hong Kong would fade and the services sector, including the small and medium enterprises operating overnight and industries such as tourism, food and entertainment establishments, advertising industry including sign production houses, etc would be adversely affected by the switch-off requirement. There were also questions as to whether it was necessary and fair to extend regulation to external lighting installations that had not attracted any complaints or caused any light nuisance to residents. Some respondents opposed to any measures against external lighting. They considered the switch-off requirement a draconian measure that was disproportionate to a seemingly localised problem which was only backed by a seemingly small number of complaints and involved minimal energy use. The switch-off requirement would undermine the competitiveness of Hong Kong as it was far more stringent than measures adopted by other overseas cities such as Singapore where no control on external lighting installations was imposed. The respondents feared that switching off their shop signs after the preset time would endanger the survival of businesses and the job security of their employee, and hence would very likely attract strong resistance from the industry. In this context, some respondents believed the recommendation of the switch-off requirement should be preceded by an assessment of the business impact and economic implications of this proposed measures. They commented that the proposed switch-off requirement would likely be more controversial than the environmental levy on plastic shopping bags, and it would not be realistic to expect light nuisance to be eliminated in Hong Kong.

14. Some respondents pointed out that many external lighting installations causing light nuisance were large signboards and would be subject to regulation under the Validation Scheme for Unauthorised Signboards being implemented by the Buildings Department. The large external

lighting installations that could not meet the size requirement under the Scheme would likely be removed and thus the level of light nuisance would be reduced accordingly. The Government should consider the practical need for imposing further restricting measures on the remaining external lighting installations only after the removal actions had been taken under the Scheme.

15. The issues of enforceability of the proposed switch-off requirement as well as the potential "grey areas" in the scope of the switch-off requirement added to the difficulty in securing consensus from the community on any suggestion to implement rigorous or mandatory measures to implement the switch-off requirement. There were doubts about the feasibility of defining statutory offences relating to light nuisance and enforcing the relevant requirements.

16. The views expressed by respondents on the specific issues raised by the Task Force are summarised in paragraphs 17-49 below.

Views collected on issues raised by the Task Force

(a) Scope of the Switch-off Requirement

- Switch-off requirement to apply to lighting installations of decorative, promotional or advertising purposes that affect the outdoor environment regardless of whether the lighting installations are interior or exterior

- Proposed switch-off requirement not to apply to lighting necessary for security, safety or operational reasons

General Comments

17. There was general consensus on granting exemptions to shop-front signs for shops that remained open after the preset time and decorative lighting for designated festive holidays. Most of the respondents agreed that no exemption should be granted to non-static signs and signage on the top of buildings, including hotels and hospitals, etc. Nevertheless, a majority of the respondents were also concerned about the "grey areas" related to lighting installations (e.g. decorative lighting in theme parks that were turned on for the safety and security of their staff and customers and directional signs to shops/restaurants

that also carry promotional value, etc.) as well as the difficulties in providing exhaustive and clear lists of the scope of "external lighting installations", "shop-front signs", "interior and exterior lighting installations", "lighting for safety, security and operational purposes" and "lighting for decorative, promotional and advertising purposes", etc. The challenge to clearly define the scope of the switch-off requirement would impair the effectiveness of the regulatory regime. In view of the grave concern about the practical difficulties in distinguishing the types of external lighting that should be subject to the switch-off requirement, some of the respondents requested the Task Force to re-examine the feasibility of developing a lighting zoning system underpinned by technical standards and parameters so that the luminance level of external lighting installations in certain districts, regardless of the types of lighting installations, would be regulated.

Decorative, Promotional and Advertising Purpose

18. Views on the proposal to switch off lighting installations of decorative, promotional or advertising purposes affecting the outdoor environment were diverse. A large number of respondents supported the proposal. They believed that the proposal would provide a clear and simple solution to address the light nuisance and energy wastage problems caused by external lighting. Lighting installations that failed to comply with the requirement could be identified easily and the impact on business operations would be minimal as the promotional effect of advertising signage would be less significant due to slower traffic at night.

19. On the other hand, some respondents did not agree with the proposal for switching off lighting installations of decorative, promotional or advertising purposes affecting the outdoor environment after the preset time on the ground that it would adversely affect the vibrant image and business environment of Hong Kong. They stressed that a careful balance should be struck between giving residents an environment conducive to sleep and the trades' wish to maximise advertisement exposure. A few respondents also observed that lighting for façade seemed to be producing much less nuisance (2% of complaint figures) than other external lighting installations, and did not support subjecting such lighting to the switch-off requirement due to the need to maintain Hong Kong's famous night scene.

20. Some respondents emphasised that not all lighting of decorative, promotional and advertising purposes would cause light nuisance, and

it would be most unfair to require all of them to be switched off. One alternative option that was proposed by these respondents was to narrow down the scope of the switch-off requirement to lighting installations that caused nuisance to residents nearby. They believed that a narrower scope could also avoid a large number of requests for exemptions which would undermine the effectiveness of the proposed regulatory measure.

Interior and Exterior Lighting Installations

21. Some of the respondents who were in favor of the proposed scope believed that interior lighting intended for the outdoor environment should also be switched off after the preset time. They observed that some of the lighting installed behind shop windows were in fact causing light nuisance that was as serious as external lighting installations, such as interior lighting installations adopted by the flagship stores of some international brands and jewelry shops, etc. Further, certain food and beverage operations such as bars and pubs located on higher levels broadcast football matches by projecting the images on building façades across the street. Film makers were also found to have used high power spotlights for shootings indoor scenes which caused serious nuisance to residents nearby.

22. However, some other respondents questioned the need for extending the switch-off requirement to interior lighting installations. Noting that the issue being dealt with was external lighting, any proposal to regulate interior lighting would be out of context. They emphasised that some interior lighting appeared to be promotional in nature were in fact installed for operational reasons. Any attempt to regulate interior lighting would have an adverse impact on the normal operation of businesses.

Lighting for Safety, Security and Operational Purposes

23. Most respondents agreed to exclude lighting for safety, security and operational purposes from the switch-off requirement. To minimise the nuisance that might be caused by functional lighting which was recommended for exclusion, some respondents suggested that the Government review the size, lighting power density, luminance level and lighting angle of street lighting, horse-racing course and short-term parking lots, etc. They also advised that reference should be made to the technical guidelines developed by the Housing Department for lighting installations at parks and rear staircases (e.g. such as timer and installing motion sensors, etc.). However, a few others did not support any exemptions for reasons

that certain functional lighting such as street lighting would brighten the night sky and adversely affect the fauna and flora habitats (e.g. flight path of bats which tended to avoid well-lit areas and reproductive behaviour of songbirds, etc.).

Concern about "Grey Areas"

24. Both the supporters of and opponents to the switch-off requirement expressed concern about the "grey areas" that might arise from the scope of the requirement proposed by the Task Force. They pointed out that many external lighting installations such as those used in theme parks, restaurants, hotels, etc. were erected for multiple purposes. These external lighting installations aimed to provide a brighter environment for the safety and security of their staff and customers, and at the same time carry decoration, promotional and advertising functions. It would therefore be difficult to distinguish precisely lighting installations of "safety, security and operational purpose" from those that were of "decorative, promotional and advertising purposes". Some owners of external lighting installations might take advantage of this loophole and evade the switch-off requirement on the pretext that the lighting installations of advertising signs had functional purposes. The respondents believed that it would be equally difficult to provide exhaustive and clear definitions of the scope of "external lighting installations", "shop-front signs" and "interior and exterior lighting installations". The practical difficulty in determining the scope of the switch-off requirement would impair its enforceability and thus its effectiveness in tackling the nuisance and energy wastage problems.

(b) Exemptions to be granted

- Exemptions to shop front signs of shops that are in operation after the preset time
- Exemptions to be granted to decorative lighting (static and non-static) two nights/ early mornings before the respective statutory holidays of Christmas, New Year and Lunar New Year until the morning of the day following the holidays
- Non-static signs should not be exempted, except for decorative lighting during designated festive holidays

Shop-front signs for Shops in Operation

25. Most respondents agreed that shop-front signs (static) for shops in operation after the pre-set time should be exempted from the switch-off requirement. Some of

them suggested that external lighting installations that could be exempted from the switch-off requirement be required to meet additional requirements such as limits on size, luminance, distance from the ground in order to protect the well-being of residents nearby.

26. As for shops and other businesses operating on upper floors, some respondents pointed out that due to the rising rents in recent years, a substantial number of catering establishments were forced out of the ground floor and were driven to higher levels of buildings. They had to rely on shop signs erected on the exterior walls outside their shops to attract businesses. Given their important promotional and advertising value, shop signs on higher levels should be allowed to be turned on even after the close of business. A small number of the respondents even argued that the nuisance of some shop-front signs located on the ground floor was comparable to that produced by external lighting installed on higher levels. Therefore, for the sake of fairness, they suggested that all shop-front signs be exempted regardless if they were located on the ground floor or higher levels. There was also a suggestion that to maintain the vibrant image of Hong Kong, shop signs on higher level of the buildings that could meet the size and luminance limitations should be exempted from the switch-off requirement after the operating hours.

27. In respect of the proposal to suggest upper-floor shops to place their shop signs on the ground floor, some respondents were worried that it might give rise to a large number of shop signs obstructing the building entrance and causing excessive lighting on the ground.

28. In general, the majority of respondents considered that signage installed on top of buildings, as well as advertising light boxes erected at bus and tram stations should be subject to the switch-off requirement. Some respondents raised the need for hotels and hospitals to keep their building-top lighting on for operational purposes. However, the majority of respondents observed that hotels and hospitals were mostly located in prominent areas with signs on the ground floor. Their guests or patients should not have any problems locating the buildings. On the other hand, a few respondents advised that their properties were mainly located in commercial districts with limited residential developments. They believed that their hotel signs on top of the buildings would unlikely be subject to light nuisance complaints and thus should be granted

exemptions so long as the hotels were still in operation.

Non-static Signs

29. Almost all respondents agreed to the proposal for not granting exemption to non-static signs as light nuisance caused by non-static signs was generally more irritating than that of static signs. Owners of lighting installations should switch off non-static signs. They further proposed that the requirements for regulating non-static signs such as video walls should be tightened. However, a few respondents questioned the reason for re-introducing measures to regulate non-static signs after the Government lifted the ban on non-static signs back in 1999. They questioned the validity of the view that "non-static signs were generally more irritating" in the absence of objective proof or statistics to show that nuisance caused by non-static lightings exceeded the generally acceptable level.

Decorative Lighting during Festive Holidays

30. Most respondents supported the suggestion of granting exemption to festive lighting (static and non-static). Some of them considered the two-day exemption too short as decorative lighting usually commenced operation long before the festive occasions to help build up the festive atmosphere. They suggested extending the exemption period to one or several weeks prior to the date of the festive occasion. Others proposed the exemption be extended to cover other festive occasions such as Mid-Autumn Festival, National Day and HKSAR Establishment Day, etc.

(c) The Appropriate Preset Time

- Option I: 11:00 p.m. to 7:00 a.m.
- Option II: Midnight to 7:00 a.m.

General Comments

31. There were mixed views on the appropriate preset time. While some respondents supported the preset time to be set at 11:00 p.m. to 7:00 a.m., others considered the preset time of midnight to 7:00 a.m. more practical. A number of respondents further suggested that a district-based preset time be developed, so that districts with more business activities like Causeway Bay and Mong Kok could have a later preset time such as 1:00 a.m. or 2:00 a.m., while residential areas and natural habitats could adopt an earlier preset time, say 9:00 p.m. or 10:00 p.m.

32. Some respondents supported Option I. They believed that the preset time of 11:00 p.m. to 7:00 a.m. would generally meet the expectation of a darker environment for sleep.

It would also tie in with the time adopted by Government departments in regulating noise nuisance and managing lighting installations at public facilities, such as leisure and cultural facilities. They believed that the public might find it confusing if a different preset time was adopted. Some added that from the community health perspective, a switch-off period longer than eight hours should be adopted for the well-being of the general public, especially for children and adolescents who were at important developmental stages. There was also a comment that from the perspective of entomology, Formosan termites might be induced by light nuisance to intrude into buildings with lighting installations, causing damage to buildings in Hong Kong, and resulting in economic losses. In May every year, those insects would choose lit-up places for breeding and nesting, and turning on external lighting at night would attract termite infestation. Therefore, switching off external lighting at an earlier hour would be of particular importance in May each year.

33. Option II had also gained the support from a substantial number of respondents. They observed that many shops and catering establishments were still in operation at 11:00 p.m. and under Option II, all of them would be exempted from the switch-off requirement. On the other hand, if Option I was to be adopted, there would be a large number of requests for exemption.

34. A number of other respondents reiterated their fundamental objection to the switch-off requirement in view of its negative impact on the business environment and the vibrant image of Hong Kong. Some even declined to discuss the preset time arrangement, fearing that the darker environment would drive the already deteriorating business environment at night further downhill. Instead of adopting a preset time to switch off external lighting, they called for a reconsideration of stipulating specific luminance levels for external lighting installations in Hong Kong.

Proposed Alternatives

35. Some respondents suggested that flexibility such as deferring the preset time to 1:00 a.m. or 2:00 a.m. be exercised in busy districts like Causeway Bay and Mong Kok while an earlier preset time, say, 9:00 p.m. or 10:00 p.m. might be applied to residential areas and natural habitats. A few others suggested that non-static signs which caused more nuisance problems be switched off at 11:00 p.m. whereas static external lighting might be subject to luminance restrictions. Certain

green groups further considered that from the energy saving perspective, external lighting should only be allowed to be turned on after sunset, say, 7:00 p.m.

(d) Implementation Approach

- Option I: Mandatory Regulation to be Preceded by a Charter Scheme
- Option II: Implement a Charter Scheme and Consider Legislation in the Light of the Outcome of the Charter Scheme

General Comments

36. There were divergent views on the appropriate approach to implement the switch-off requirement. Some respondents demanded immediate legislation to tackle the light nuisance problem without any preceding voluntary measures. However, some other respondents strongly opposed to any territory-wide regulatory measures against external lighting. They believed that enacting a new legislation would be time-consuming and would arouse a lot of contention within the community, and might not be able to bring about immediate changes in view of the long lead time for legislative processes and for taking enforcement or prosecution actions. They were particularly concerned about the adverse impact of legislation on the business sector including the catering, entertainment, retail and advertising industries. They believed education and promotional efforts, such as introducing a charter scheme, promoting the Guidelines on Industry Best Practices for External Lighting to the industry or setting up an arbitration mechanism would provide more practical options to drive behavioural change in the business sector.

37. Those who had no strong views on legislative control shared the concern about the enforcement difficulties of the legislative approach, and believed a more flexible approach such as a charter scheme would be a more practical option to encourage owners to switch off their external lighting installations after the preset time.

Option I: Mandatory Regulation to be Preceded by a Charter Scheme

38. Some respondents supported Option I. They noted that the Government issued the voluntary Guidelines on Industry Best Practices for External Lighting in as early as 2012 but the issue of light nuisance remained unresolved. They strongly believed that from the perspective of the affected residents, legislation would be the only means to provide the Government with the mandate to take enforcement action against the owners or management

of external lighting installations causing nuisance. In the absence of legislative measures, businesses would not uniformly implement the switch-off measure, thus creating an unlevelled playing field in the business sector. Despite the strong desire for legislation, they generally agreed to launch a charter scheme while a legislative proposal was being prepared so that the community would have sufficient time to adjust to the new requirements. They also believed that the charter scheme would help address cases that fell into the "grey areas" as identified in the scope of the switch-off requirement, whilst the legislation could target at obvious light nuisance cases. To promote participation, they proposed that relevant DCs be invited to draw up an invitation list setting out the external lighting installations whose owners or management should be invited to join the charter. The charter scheme, though voluntary, could impose pressure on businesses to implement improvement measures. With the growing importance of corporate social responsibility, large enterprises would be willing to accept the invitation and sign up to the charter to boost their corporate image. The Government should also take the lead to reduce light nuisance so that large enterprises would follow suit.

Option II: Implement a Charter Scheme and Consider Legislation in the Light of the Outcome of the Charter Scheme

39. Some other respondents supported Option II as they believed that a charter scheme should be introduced first to drum up local support and to help stakeholders familiarise with the switch-off requirement. Mandatory regulation might follow subject to the experience gained in implementing the charter scheme. This step-by-step approach would also allow the Government to resolve the implementation issues (e.g. difficulty in identifying responsible parties and the time taken for instigating necessary legal proceedings) before deciding whether legislative measures should be considered. They emphasised that the crux of the problem was not related to new signs but the large number of existing signs. They therefore suggested that subsidies be provided to encourage owners to carry out improvement measures to the design and energy performance of existing external lighting installations within a grace period. Upon the expiry of the grace period, the charter scheme or, if necessary, legislation should follow. The grace period was necessary as many existing signboards were bound by existing tenancy agreements and the tenants would need time to adapt to the new requirement and

resolve possible tenancy problems. The grace period would also provide a clear timetable for the public and the trades to plan for improvement measures in preparation for the mandatory switch-off requirement.

40. Some added that it would be difficult to strike a balance between the competing interests of the business sector and the affected residents. As reflected by complaint statistics, the issue of light nuisance appeared to concentrate in districts that had a large number of mixed commercial-cum-residential developments such as Central and Western districts, Wan Chai and Yau Tsim Mong. It would be preferable to implement a more flexible approach such as a charter scheme to encourage owners to switch off their external lighting installations after a preset time. The Government could help raise public awareness of light nuisance by launching publicity campaigns so that people would support businesses which were willing to switch off their external lighting installations.

Other implementation approaches suggested by respondents

Immediate legislation without preceding voluntary measures

41. A number of respondents urged the Government to pursue legislative control over external lighting installations immediately. They did not believe any voluntary measures would help alleviate the light nuisance caused by external lighting. The large signboards that the community could not tolerate were mostly invested by large enterprises. As a significant sum of investment was involved in the projects, voluntary measures such as charter schemes would unlikely receive extensive support from the trades. They believed that the issue had been dragged on for years and the problems of light nuisance and energy wastage had gone unchecked and worsened due to un-cooperative attitude of some business operators, erection of non-static signboards and video walls, an increase in the number of signboards which intensified competition for attention and in turn gave rise to even brighter signboards, and the use of more energy-efficient lighting installations such as LEDs which were much brighter than traditional lighting equipment. Some operators tended to abuse external lighting by switching on the signboards even when the signs were not meant for business promotion (e.g. private hospitals) or even after midnight when activities on the streets were limited. Certain international brands even claimed that it was their global policy to keep their internal and external lighting on throughout the night. It would be necessary to enact legislation to tackle them.

Fundamental objection to any control over external lighting

42. Some other respondents however opposed to any type of territory-wide legislative measure for a localised problem caused by external lighting in a few districts. They believed it would be unfair to subject all external lighting installations to the switch-off requirement when only some of them had attracted complaints from residents. They pointed out that the number of complaints related to external lighting was only around 200 per year. About half of the complaints were even related to lighting for safety, security and operational purposes, which would be exempted from the switch-off requirement under the current proposal. Complaints about external lighting of decorative, promotional and advertising purposes accounted for another half of the complaints, but the number and the highly localised nature of the complaints would not justify a territory-wide legislation. The respondents added that whether the luminance level of a lighting installation would amount to nuisance might vary from one person to another. It would therefore be difficult to define clearly "nuisance" in legislation, not to mention the enforcement difficulty in gathering sufficient evidence to substantiate a "nuisance" case. Considering that enacting a new legislation for regulating external lighting would be controversial and time-consuming, they doubted if legislation would be a feasible way forward. Instead, the respondents strongly suggested that educational and promotional efforts be strengthened to drive behavioural change in the business sector. They believed that introducing a charter scheme, re-introducing the Guidelines on Industry Best Practices for External Lighting to the industry or setting up an arbitration mechanism would be better and more palatable options than the switch-off requirement. They were worried that imposing the switch-off requirement would aggravate the worsening business environment and diminish the competitiveness of Hong Kong. Operators of the retail, catering and entertainment as well as the tourism industries would be compelled to close down as they would not be able to afford the high legal costs arising from mandatory measures. Strong opposition from the trades and the employees would be expected.

43. Some respondents noted that the Buildings Department had already imposed statutory requirements on the size and design of signboards. Any additional measures to regulate signboards from the light nuisance angle would baffle the business

sector. They stressed that, unless the legislation could be implemented effectively and non-compliance cases would be resulted in successful prosecution, the proposed legislative approach would bring no benefits to the community but create an unfair playing field where sign owners who complied with the requirements would lose out whilst those who refused to act would remain unaffected and their signs would still exist.

Enforcement issues

44. Other respondents from the local community and green groups felt that there was little difference between Options I and II. The respondents believed that regardless of the implementation approach, a transitional period should be allowed to facilitate the public and owners of external lighting to adapt gradually to the requirement. They were more concerned about the enforcement issues and wondered if an appropriate law enforcement agency had been identified to enforce the switch-off requirement. They also questioned if effective enforcement of legislative control was possible. Inevitably, the enforcement actions would be resource demanding given the need to identify the responsible parties, gather evidence and instigate legal proceedings in appropriate cases. The problem would be further aggravated by the large number of external lighting installations including building façade lighting which would be more than the 120,000 signboards. In the absence of a dedicated enforcement team, the effectiveness of the switch-off requirement, regardless of whether it is mandatory or voluntary, would likely to be unsuccessful.

All new external lighting installations and installations that are due for replacement to use energy efficient lamps

(e) Energy Efficient Lighting

45. The majority of the respondents supported the recommendation for new external lighting installations and installations due for replacement to use energy efficient lamps, although they doubted how the proposal could be implemented and whether compliance could be monitored effectively. They believed that as large enterprises which were major users of advertising signage became increasingly concerned about their public image, they would likely welcome the proposal so long as a grace period would be provided to allow time for phasing out the existing lighting installations and to avoid unnecessary wastage. As more energy saving products had been introduced into the market, traditional light fittings would be eliminated over time.

46. However, a smaller number of respondents objected to the proposal. They pointed out that certain lighting installations were designed for specific visual effects and could only use specific types of luminaries which could not be replaced by energy efficient lamps. The proposal to require the use of energy efficient lamps would not be practicable. They were also of the view that the limited channel to properly dispose of energy efficient lighting such as T5 florescent light and LED lighting would have negative impact on the environment.

Other views collected during the Engagement Exercise

47. A large number of respondents, including both supporters of and opponents to the switch-off requirement, shared reservations about the proposal to apply the switch-off requirement across the territory as it would be unfair to subject all external lighting installations of decorative, promotional or advertising purposes to the switch-off requirement when only a small number of them had attracted complaints. They believed that regulating the luminance of external lighting installations could be a more tenable option to reduce the nuisance caused by individual installations, even though the Task Force had highlighted that the building density was high in Hong Kong and that the multiple light sources might cause nuisance to the residents even if the luminance of a particular lighting installation was within the limit. The respondents noted that the lighting environment of Hong Kong was very different from overseas cities and suggested that Hong Kong develop its own lighting zoning system to provide clear guidance for external lighting installations in different zones. They considered that the diversity of cityscape was important and the unique ambience of the city should be preserved. In fact, local residents should be well aware of the lighting environment of the districts where they lived in. For instance, residents of Mong Kok area would not expect to experience the same lighting environment as those living in the Southern District.

48. Some respondents suggested developing technical standards and parameters that could meet the needs of Hong Kong to provide a more objective tool to regulate external lighting. Flexibilities should be exercised when imposing standards and parameters on different areas. Tighter requirements should be applied to residential areas while commercial districts and buildings facing the harbour with limited residential developments should be subject to a more relaxed

luminance requirement. A few respondents remarked that the business sector would likely find the proposal of imposing different limits on the impact of external lighting for different lighting zones more palatable than the proposed switch-off requirement, as it would be more practical for the industry to comply with the luminance levels than to switch off external lighting. Reference should be drawn from the international standards adopted by overseas metropolises like New York and Tokyo where specific parameters were set for the luminance level of external lighting installations. They also suggested that the luminance level of external lighting be measured from the light receivers' end in order to get to the root of the nuisance problem caused by the lighting installations.

49. Some of the respondents considered it useful to make reference to the Noise Control Ordinance so that regulatory measures would be targeted at external lighting installations that caused light nuisance. Some others suggested that reference be made to the liquor licensing system so that the erection of external lighting installations on buildings would be subject to approval from the authorities and the requirements for minimising light nuisance and energy wastage to the satisfaction of residents in the vicinity. There were also suggestion for adopting different parameters such as size, lighting power density, lighting angle, maximum height from ground, distance between signs and flashing frequency (for non-static signs) to address the nuisance and energy wastage problems caused by external lighting.

3: Recommendations

50. The divergent views on the issue of external lighting, together with the strong resentment to any regulation exhibited by some respondents, seem to suggest that the community is not yet ready for rigorous regulation of external lighting. While some respondents who sympathised with residents affected by light nuisance demanded immediate legislation without any preceding voluntary measures, some other respondents strongly opposed to any territory-wide regulatory measures to tackle the external lighting problem which was a localised issue. They believed that enacting a new legislation would be time-consuming and arouse a lot of contention within the community. They were particularly concerned about the impact on the business sector including the catering, entertainment, retail and advertising industries. Moreover, many respondents believed that the difficulties in defining statutory offences relating to light nuisance would have to be resolved before any meaningful statutory regime to regulate external lighting may be introduced. The need for significant amount of enforcement resources would be particularly challenging in view of the large number of external lighting installations including building façade lighting as well as the some 120,000 signboards. Any mandatory switch-off requirement would unlikely be successful unless there is a large dedicated enforcement team to oversee compliance.

A Multi-pronged Approach

51. Although the community has yet to develop a consensus on the need for legislation to regulate external lighting, the outcome of the engagement exercise clearly indicates a genuine need as well as public support for other measures to alleviate the problems caused by external lighting. Inaction is not an option.

52. Having thoroughly considered the views and comments received during the engagement exercise, the Task Force would recommend the Government to adopt a multi-pronged approach to raise public awareness of the issue and to bring about changes in an incremental way. The approach

has six components: a) Charter Scheme; b) Promotion of Good Practices; c) Acknowledgement of Good Corporate Citizens; d) Public Education and Publicity Campaign; e) Future Monitoring; and f) Submission of regular reports to the Advisory Council on the Environment. Sufficient resources should be allocated by the Government for a swift and effective implementation of the measures set out in paragraphs 53-76 below.

(a) Charter Scheme

53. On the basis of the support expressed by many respondents during the engagement exercise, the Task Force recommends the introduction of a charter scheme to implement the switch-off requirement. The Task Force believes a voluntary charter scheme is an appropriate tool to tackle light nuisance at this juncture due to the following reasons:

    (a) This can provide a more timely, flexible and district-based approach to target at the external lighting installations that have been causing nuisance to residents, while addressing the worries of some respondents about the drastic negative impact of a mandatory and territory-wide switch-off requirement on the business and overall lighting environment at night. With rigorous promotion, a charter scheme can help drum up local support for and facilitate transition to a statutory regime that might be contemplated in future if and when warranted;

    (b) The implementation of a charter scheme represents a step-by-step approach that would allow the Government, the business sector and the community to accumulate experience and develop common understanding on practical implementation issues (e.g. which are the external lighting that should be subject to the switch-off requirements, how the nuisance of external lighting could be mitigated, the extent of impacts on businesses when the external lighting is switched off after preset time, etc.) before deciding whether or when legislative measures should be eventually considered;

    (c) As opposed to statutory control which inevitably involves lengthy legislative processes and may not allow swift enforcement actions, a voluntary charter scheme to be supplemented by education and promotional efforts can be implemented quickly and would be a more practical option to build up support and drive behavioural change;

(d) When compared to the imposition of statutory or other regulatory controls, the charter scheme could encourage businesses to adopt good practices to avoid causing nuisance to the community in a more positive way. With the growing importance of corporate social responsibility and transparency of information, large enterprises would be more willing to accept invitation to sign up to the charter to boost their corporate image; and

(e) As demonstrated by the Government's experience in handling complaints against external lighting, most of the owners or responsible persons of the external lighting installations are willing to take the Government's advice and consider taking appropriate improvement measures in response to the complaints. The responsiveness of the lighting owners to Government's persuasion shows that voluntary measures could help tackle nuisances relating to external lighting.

54. Introducing a charter scheme is indeed a more pragmatic and appropriate measure to deal with the problems associated with external lighting which are largely localised in nature. Compared with territory-wide mandatory measures, a charter scheme provides more flexibility to respond to geographical differences so that different preset time can be applied to different areas in accordance with the nature of the activities in the respective areas. It can also be implemented swiftly as it does not involve the lengthy legislative process of law drafting, including the development of clear definitions of the issues and breaches, and the building of community consensus on the content of the legislation and the proposed punitive measures through extensive public consultation and engagement. A charter scheme which allows more flexibility can also alleviate the concern about the fairness of subjecting all external lighting installations to the same switch-off requirement when only some of them had attracted complaints from residents. Moreover, it is a less draconian measure that will be more palatable to the business sector and can help promote adoption of good practices. A voluntary charter scheme is also conducive to the development of consensus for regulation of external lighting if needed in future. It can encourage community participation and engagement in the efforts to alleviate the problems of external lighting.

55. The charter scheme should target at owners and responsible persons for lighting installations of decorative, promotional or advertising purposes affecting the outdoor environment at private buildings, who will be invited to pledge to switch off external lighting installations at a preset time that suits the operational needs of the relevant district. Unlike statutory control, the implementation of a charter scheme should not take long. Therefore, the Task Force expects the Government to implement the charter scheme as soon as possible, preferably no later than six months after the Government's acceptance of the Task Force's recommendations.

Scope and Exemption

56. There was general consensus on the scope of the switch-off requirement:

    (a) Switching off lighting installations of decorative, promotional or advertising purposes that affect the outdoor environment, regardless of whether the lighting installations are interior or exterior, as the arrangement provides a clear and simple solution to address the light nuisance and energy wastage problems caused by external lighting;

    (b) Signage on top of buildings should be switched off after the preset time. For hotels and hospitals, as they are mostly located in prominent areas with signs on the ground floor, their guests and patients should not have any problems locating the buildings; and

    (c) Non-static signs should be switched off after 11:00 p.m. as light nuisance caused by non-static signs is generally more irritating than that of static signs.

57. There was also general consensus on the types of external lighting installations that should be exempted from the switch-off requirement:

    (a) Shop-front signs (static) on ground floor for shops that remain open after the preset time;

    (b) Decorative lighting for designated festive holidays (static and non-static) such as Christmas, New Year and Lunar New Year. Some suggested extending the exemption period to one or several weeks prior to the date of the festive occasion. Others proposed the exemption be extended to cover other festive occasions such as Mid-Autumn Festival, National Day and HKSAR Establishment Day, etc; and

(c) Lighting for safety, security and operational purposes such as street lighting, lighting at airport and container port and construction sites, etc.

58. The Task Force would recommend granting exemptions to shop-front signs (static) on ground floor that remain open after the preset time and lighting for safety, security and operational purposes (i.e. paragraph 57(a) and (c) above). On the issue of decorative lighting for festive holiday (i.e. paragraph 57(b) above), taking into account the view of the tourism industry, we suggest providing an exemption period of two weeks before the respective statutory holidays of Christmas, New Year and Lunar New Year until the morning of the day following the statutory holidays.

59. In sum, the Task Force recommends the following scope of the switch-off requirement –

(a) Lighting installations of decorative, promotional or advertising purposes that affect the outdoor environment should be switched off after the preset time;

(b) Signage on top of buildings (including buildings with rooftop advertising signboards, hotels and hospitals) should be switched off after the preset time;

(c) Non-static signs should be switched off after 11:00 p.m.;

(d) Shop-front signs (static) on ground floor for shops that remain open after the preset time should be exempted from the switch-off requirement;

(e) Decorative lightings for designated festive holidays (static and non-static) should be exempted from the switch-off requirement two weeks before the respective statutory holidays of Christmas, New Year and Lunar New Year until the morning of the day following the statutory holidays; and

(f) Lighting for safety, security and operational purposes (e.g. street lighting, lighting at airport and container port and construction sites, etc.) should be exempted from the switch-off requirement.

60. As mentioned in paragraphs 24-28 above, some of the respondents have raised the following questions concerning the scope of the switch-off requirement during the engagement exercise -

(a) The "grey areas" related to lighting installations erected for multiple purposes, e.g. decorative lighting in theme parks that is turned on for the

safety and security of their staff and customers, and directional signs to shops/restaurants that also carry promotional value, etc.

(b) The difficulties in providing exhaustive and clear lists of the scope of "external lighting installations", "shop-front signs", "interior and exterior lighting installations", "lighting for safety, security and operational purposes" and "lighting for decorative, promotional and advertising purposes", etc.

(c) Shops on upper floors: Due to various reasons, a substantial number of catering establishments have been forced to move from ground floor to higher levels of buildings. They have to rely on shop signs erected on the exterior walls outside their shops to attract businesses. Switching off their shop signs after the preset time would affect the survival of their businesses and very likely attract strong resistance from the industry. As for the proposal of inviting upper-floor shops to place their shop signs on the ground floor, some respondents have raised concern about the impact of the suggestion as it may give rise to a large number of shop signs obstructing the building entrance and causing excessive lighting on the ground.

61. To address the first two questions, we suggest a more liberal treatment for participants of the charter scheme in order to attract more participants. For instance, for an owner of a shop with multiple external lighting installations, the shop can be regarded as a participant in the charter scheme so long as the owner undertakes to switch off their lighting of decorative, promotional or advertising purposes affecting the outdoor environment after the preset time. Exemptions can be granted to certain external lighting so long as the owner confirms that those installations have to be turned on for safety or functional purposes. However, if the Government receives any complaints about the nuisance produced by those installations and that the complaints are found to be justified following site inspection by the Government, the owners will be asked to switch off the lighting under complaint after the preset time. If the owner refuses to switch off the relevant lighting after the preset time, the shop concerned will be removed from the list of participants in the charter scheme.

62. As for the shops on upper floors, we expect that they would be less resistant to the charter scheme than

a territory-wide mandatory switch-off requirement. We believe that these shops should be encouraged to participate in the charter scheme and switch off their external lighting installations after the preset time to minimise nuisance to residents nearby.

Preset Time

63. The outcome of the engagement exercise suggests that apart from the consensus that non-static signs which caused more nuisance problems should be switched off at 11:00 p.m., the public has diverse views on the options set out below:

    (a) 11:00 p.m. to 7:00 a.m.

    (b) midnight to 7:00 a.m.

    (c) a district-based preset time. An earlier preset time say 9:00 p.m. or 10:00 p.m. for residential areas and natural habitats, and a later preset time such as 1:00 a.m. or 2:00 a.m. for districts with more commercial activities like Causeway Bay and Mong Kok.

64. To meet the general expectation of a darker environment for sleep, we would suggest introducing a charter scheme to encourage owners and management of external lighting installations to switch off external lighting at 11:00 p.m. However, for districts with more economic activities at night, owners and management of external lighting installations may choose to pledge to switch off external lighting at midnight, except for non-static lighting which should be switched off at 11:00 p.m. (or be turned to static mode) regardless of its location. The Government may consider delineating areas with more economic activities after dark in each district to ensure that the delineation would reflect the local situation and accommodate the needs of residents and commercial establishments.

Possible Participants in the Charter Scheme

65. To encourage the community's participation in the charter scheme, the Government may consider enlisting the assistance of the relevant trade associations (e.g. trade associations in the advertising and retail industries), chambers of commerce, professional institutions (e.g. Hong Kong Institution of Engineers and International Commission on Illumination (CIE) (Hong Kong)), property developers, Hong Kong Green Building Council, lighting design professionals, the property/facility management sector and the DCs, etc., in encouraging owners of lighting installations to sign up to the charter. To ensure

that the scheme would be able to respond to the needs of different districts or different parts of the districts, the Government should identify the owners or management of external lighting installations that have received complaints and invite them to join the charter scheme. A pilot scheme may also be introduced to delineate certain areas or streets where all decorative, promotional and advertising external lighting installations have to be switched off after the preset time, regardless of whether the exemption criteria (such as the operating hours) discussed in paragraph 59 should apply. The purpose is to test the response of the community to a more stringent switch-off requirement, as well as the outcome of this across-the-board switch-off requirement and its impact on night time environment of those areas.

66. The Government should appeal to the head offices of certain international brands to invite their Hong Kong branches to participate in the charter scheme.

67. The Government should take the lead to reduce light nuisance by undertaking to comply with the switch-off requirement as set out in the charter at all properties owned or managed by the Government. The Government should also work with public bodies and organisations, such as education institutions, public hospitals and premises managed by the Hong Kong Housing Authority and the Hong Kong Housing Society, etc. and invite them to join the charter scheme.

(b) Promotion of Good Practices

68. The Task Force notes that the Government issued in 2012 "Guidelines on Industry Best Practices for External Lighting Installations" (Annex 2 to the Engagement Document) to help encourage the adoption of good practices in the design, installation and operation of external lighting installations. The Guidelines suggest measures to minimise light nuisance including the use of appropriate shields to prevent overspill, repositioning lighting installations and adjusting the aiming angles to avoid illumination outside their intended areas, etc. We believe that the Government should actively promote the adoption of these good practices.

69. Promotion of the Guidelines can be done at two levels:

Government sector: The Government should lead by example by pledging to adhere to the Guidelines where appropriate. The scope of application should include Government office

buildings and facilities such as recreational parks and country parks, etc; and

Non-Government sector: This should cover public bodies and organisations such as education institutions and hospitals managed by the Hospital Authority and shopping malls under the Housing Authority. As for the private sector, the Government may appeal to professional organisations and trade bodies to help promote the Guidelines among retail outlets, restaurants, architects, engineers, designers and contractors of external lighting, advertising agencies, property developers and property management companies, etc. Signatories of the charter on the switch-off requirement should also be invited to adopt the Guidelines.

(c) Acknowledgement of Good Corporate Citizens

70. The Task Force believes that the provision of incentives to reinforce and acknowledge efforts to alleviate the problems of external lighting can help promote public participation in the Government's efforts to tackle the problems of external lighting. The Government should capitalise on the growing importance of corporate social responsibility and organise award schemes to acknowledge companies which sign up to the charter and adopt the good practices set out in the guidelines. The awardees may be publicised and be given certificates for display at the respective shops and companies.

(d) Public Education and Publicity Campaign

71. The Task Force considers that the Government should raise public awareness of problems associated with external lighting by launching publicity campaigns through API, posters, ambassador programme, educational workshops on good practices, etc.

72. Apart from inviting local bodies and trade associations and their members to switch off lighting for decorative, promotional or advertising purposes affecting the outdoor environment, the Government should also encourage them to adopt proper lighting design and technology use during the design and procurement stages of new buildings or existing buildings undergoing major renovation to minimise light nuisance and energy wastage. Practical tips on implementation such as installation of a timer may also be disseminated. The Hong Kong Green Building Council and the BEAM Society may also be invited to update the

assessment criteria under BEAM Plus for both new buildings and existing buildings in support of the charter and/or the adoption of proper external lighting design and technology use. The corresponding training for BEAM Pro and BEAM Affiliate may also include the proper design and management of external lighting to minimise light nuisance and energy wastage.

(e) Future Monitoring

73. Efforts to promote the charter scheme and the adoption of good practices should not be one-off. The Government should be invited to monitor the impact of the administrative measures as set out in paragraphs 53-72 above by conducting a survey on external lighting two years after the implementation of the charter scheme. The target respondents of the survey should include residents in various districts, owners of lighting installations, businesses, consumers, etc. The survey may review the response to the charter scheme, including the number of signatories and their compliance with the switch-off requirement, penetration rate and impact on the business sector; as well as the public perception of external lighting, response of the owners or management of external lighting installations to complaints from the public, and impact of the pilot scheme, etc.

74. The two-year period is proposed to allow the recommended measures to take effect, including the time required to promote the administrative measures to owners of external lighting and the general public to gather momentum for the commitment to switch off external lighting installations, the time needed for the owners of external lighting to complete the necessary alteration works to their lighting installations, the lead time for the new advertisement contracts with specified switch-off time to take effect, and the process for replacing existing contracts that do not specify switch-off time, etc.

75. Having regard to the complexities involved in introducing legislation to regulate external lighting, and hence the tremendous efforts required to study and resolve the relevant issues, the Task Force would recommend the Government to commence preparatory work to pave way for legislation in the event that the review after the survey conducted two years after the implementation of the charter scheme indicates strong justifications for statutory control of external lighting installations.

(f) Submission of regular reports to the Advisory Council on the Environment

76. The Task Force believes that on-going monitoring is necessary and recommends the Government to report to the Advisory Council on the Environment (ACE) regularly on the implementation of the administrative measures. The Task Force also urges the Government to continue to take positive actions to handle complaints against external lighting installations, including conveying the concerns of the complainants to the owners or responsible persons of the external lighting installations concerned and providing advice on the appropriate improvement measures to minimise the problems caused by the lighting installations.

Response to Views on Lighting Zoning System and Other Parameters

77. The Task Force notes that some respondents had reservations about the proposal to apply the switch-off requirement across the territory as it would be unfair to subject all external lighting installations of decorative, promotional or advertising purposes to the switch-off requirement when only certain number of them had attracted complaints. In this context, they requested the Task Force to re-examine the feasibility of developing a lighting zoning system underpinned by technical standards and limits on the luminance level for each zone so that the luminance level of external lighting installations in certain districts, regardless of the types of lighting installations, would be regulated. They believed that regulating the luminance of external lighting installations provides a more objective tool to regulate external lighting, and represents a more tenable option to reduce the nuisance caused by individual installations. The zoning system would enable the Government to apply tighter requirements to residential areas while commercial districts and buildings facing the harbour with limited residential developments can be subject to a more relaxed luminance requirement. There were also suggestions for adopting different parameters such as size, lighting power density, lighting angle, maximum height from ground, distance between signs and flashing frequency (for non-static signs) to address the nuisance and energy wastage problems caused by external lighting.

78. In considering the suggestion on the proposed lighting zoning system, the Task Force has referred to its earlier studies on those parameters

and concluded that in view of the high building density in Hong Kong, the multiple and cumulative light sources might cause nuisance to the residents even if the luminance of a particular lighting installation was within certain specified limits. Besides, the highly mixed commercial-cum-residential developments in Hong Kong would render it infeasible to draw up a meaningful lighting zoning map in Hong Kong. The Task Force is also aware of the comments from some respondents that the switch-off requirement was preferable to regulation of luminance level or other technical standards because it would be more difficult to monitor compliance with the prescribed luminance level.

79. As regards other proposed technical measures such as lighting angle, flashing rate, etc., they have been largely covered by the good practices in the "Guidelines on Industry Best Practices for External Lighting Installations", which should be re-launched as part of the publicity campaign under the package of administrative measures proposed in paragraphs 68 and 69 above.

4: Conclusion

80. The Task Force is grateful for the respondents, including those from the general public and the stakeholder groups such as professional associations, trade bodies and green groups, for offering valuable views and suggestions which have helped shape the recommendations of the Task Force. As we have pointed out in the Engagement Document, the issue of external lighting is a complicated one, and attracts a wide range of responses from different sectors of the community. Despite the diversity of public opinions on the issue and the appropriate way forward, we believe that there is a genuine need for the community to act together to address the problems of light nuisance and energy wastage that may be caused by external lighting. Inaction is not an option. We believe the multi-pronged approach recommended in this report will help raise public awareness of the issue and bring about changes across the community in an incremental and progressive way.

81. In conclusion, the Task Force recommends the Government to provide sufficient resources for the implementation of the following package of measures -

    (a) implementing a voluntary charter scheme as soon as possible, preferably no later than six months after the Government's acceptance of the recommendations of the Task Force (see paragraphs 53-67 above);

    (b) re-launching the "Guidelines on Industry Best Practices for External Lighting Installations" issued by the Government in 2012 as part of the publicity campaign to promote good practices on the design, installation and operation of external lighting installations for reference by property developers, architects and engineers, lighting designers and contractors, owners and users (see paragraphs 68-69 above);

(c) organising award schemes to acknowledge owners and management of external lighting installations which sign up to the charter and adopt the good practices set out in the Guidelines (see paragraph 70 above);

(d) launching public education and publicity campaigns programmes to raise public awareness of the problems associated with external lighting (see paragraphs 71-72 above);

(e) monitoring the impact of the administrative measures by conducting a survey two years after the implementation of the charter scheme and commencing preparatory work to pave way for legislation in the event that the review after the implementation of the charter scheme indicates strong justifications for statutory control of external lighting installations (see paragraphs 73-75 above); and

(f) submitting regular reports to ACE on the implementation of the administrative measures, and continuing to take positive actions to handle complaints against external lighting (see paragraph 76 above).

Annex A

Chairman Dr Albert Chau Wai-lap

Members
Mr Charles Nicholas Brooke
Mr Cary Chan
Ir Simon Chung Fuk-wai
Dr Chung Tse-ming
Mr Mason Hung
Mr Lam Kin-lai
Mr Edwin Lau
Mr Eric Lau Kim-wai
Mr Alfred Lee Tak-kong
Mr Andrew Lee Chun-lai
Mr Rex Wong Siu-han
Mr Randy Yu*

Terms of Reference

To enhance public awareness of and address concerns over external lighting, the Task Force is to advise the Government on -

(a) the direction and focus of publicity and public education;

(b) the technical standards and related supplementary parameters for external lighting levels that should be developed for Hong Kong to suit local circumstances; and

(c) the appropriate strategy and measures for tackling nuisance and energy wastage problems caused by external lighting.

* Mr Yu resigned from the Task Force on 18 February 2015.

Annex B

Task Force on External Lighting

(set up by the Environment Bureau of HKSARG)

Document for Engaging Stakeholders and the Public

August 2013

This document invites comments from stakeholders and the public on the findings and recommendations of the Task Force on External Lighting.

Background

2. The lighting in our city, be it from households or commercial establishments, is part and parcel of the spectacular night scene of Hong Kong. It also contributes to the safe environment in our streets after nightfall. That said, the community is also aware of the impact external lighting may have on our daily life. Excessive external lighting is increasingly a community concern. While "excessive external lighting" cannot always be clearly defined, there are two major issues in it –

   (a) **light nuisance** caused by external lighting to residents nearby, usually as a result of strong, sometimes flashy, light; long operating hours and proximity to light sensitive receivers, etc.; and

   (b) **energy wastage** due to excessive light intensity, use of inefficient lighting installations and long operating hours.

3. In view of increased public concern about light nuisance and energy wastage caused by external lighting, the Government has taken a series of actions to ascertain the problems arising from external lighting and to identify possible measures to address the problems. These include -

   (a) the commissioning of a consultancy study on energy wastage and light nuisance of external lighting in 2009 (the Study), covering (i) the experience of metropolises similar to Hong Kong in handling external lighting problems; (ii) a survey on views of relevant stakeholders; and (iii) research on the usage of external lighting in various representative areas in Hong Kong. Major findings of the Study are at **Annex 1**; and

   (b) the promulgation of the Guidelines on Industry Best Practices for External Lighting in January 2012 to encourage early action to minimise light nuisance and energy wastage. The Guidelines set out some general good practices on the design, installation and operation of external lighting installations for reference of lighting designers, contractors, owners and users. They cover operating

hours for lighting, automatic controls for lighting, light pollution control measures, energy efficiency measures, lighting project design planning, glare prevention to road users, and advertising signs. A copy of the Guidelines is at **Annex 2**.

Task Force on External Lighting

4. In addition, the Government set up the Task Force on External Lighting (the Task Force) in August 2011 to advise it on the appropriate strategy and measures for tackling nuisance and energy wastage problems caused by external lighting, having regard to international experience and practices. Members of the Task Force are drawn from a wide cross section of the community, including professional bodies, relevant trades, the academic community and green groups. Current membership and Terms of Reference of the Task Force are at **Annex 3**.

5. The Task Force has studied the technical standards and parameters as well as implementation approaches adopted by overseas regulatory regimes in tackling the problems of energy wastage and nuisance caused by external lighting. In addition to document-based studies and discussion at meetings, the Task Force has visited locations in Hong Kong where external lighting has been the subject of complaints, including Causeway Bay, Wan Chai, Tsim Sha Tsui and Mongkok, etc, to assess the applicability of the parameters and standards to Hong Kong.

External Lighting in Hong Kong

External Lighting vs Light Pollution

The discussion about light pollution is a relatively new issue. There has yet to be a universally accepted definition of and regulatory framework for "light pollution", and different places may define light pollution in different ways. As pointed out by the US Federal Government which defines light pollution as "the illumination of the night sky caused by artificial lighting sources", light pollution is the side effect of industrial civilization; and the amount of outdoor lighting increases as a result of increasing population. However, there has yet to be a universally accepted and well established threshold for determining the level of external lighting that is scientifically deemed as "pollution".

6. In Hong Kong, there have been increasing public concerns about the problem of light nuisance. Since 2009, the Environmental Protection Department (EPD) has been receiving around 200 complaints against external lighting annually. More detailed figures are set out in Table 1 below.

Table 1: Type of external lighting under complaint

Type of External Lighting	Number of complaints (%)			
	2009	2010	2011	2012
Shop signs and advertisement boards	49 (23%)	103 (46%)	94 (40%)	101 (45%)
Lighting for facades and features	48 (23%)	47 (21%)	58 (25%)	5 (2%)
Video wall	22 (10%)	7 (3%)	5 (2%)	12 (5%)
Lighting for construction site (some for illuminating signboards)	27 (13%)	20 (9%)	20 (9%)	16 (7%)
Lighting for sports fields and playgrounds	13 (6%)	11 (5%)	8 (3%)	4 (2%)
Lighting outside buildings (not for facades and features)	4 (2%)	3 (1%)	5 (2%)	12 (5%)
Others (such as street lighting, lighting for school, car park, swimming pool, race course, golf range and cargo handling area)	50 (23%)	35 (15%)	44 (19%)	75 (33%)
Total	**213**	**226**	**234**	**225**

7. A large proportion of complaints are about light nuisance, and the number of complaints that are related to energy wastage is much less significant, as shown in Table 2 below.

Table 2: Major concerns of the complainants

Concerns of Complaints	Number of complaints (%)	
	2011	2012
Light nuisance	194 (83%)	185 (82%)
Energy wastage	8 (3%)	13 (6%)
Light nuisance + energy wastage	24 (10%)	21 (9%)
Unknown	8 (3%)	6 (3%)
Total	**234**	**225**

8. As regards the geographical distribution of complaints, Table 3 shows that on average, around 40% of the complaint cases are located in Central, Wanchai and Yau Tsim Mong districts.

Table 3: Breakdown of complaints against external lighting by districts

District	Year	
	2011 (%)	2012 (%)
Yau Tsim Mong	41 (18%)	34 (15%)
Wan Chai	42 (18%)	30 (13%)
Central & Western	20 (9%)	23 (10%)
Eastern	20 (9%)	22 (10%)
Yuen Long	11 (5%)	18 (8%)
Kowloon City	15 (6%)	16 (7%)
Sha Tin	18 (8%)	16 (7%)
Tuen Mun	8 (3%)	13 (6%)
Sham Shui Po	4 (2%)	9 (4%)
Southern	9 (4%)	8 (4%)
Kwun Tong	7 (3%)	7 (3%)
Kwai Tsing	4 (2%)	7 (3%)
North	2 (1%)	6 (3%)
Sai Kung	6 (3%)	4 (2%)
Tai Po	2 (1%)	4 (2%)
Wong Tai Sin	7 (3%)	4 (2%)
Islands	5 (2%)	2 (1%)
Tsuen Wan	13 (6%)	2 (1%)
Total	**234 (100%)**	**225 (100%)**

Lighting Environmental Zoning System

9. The Task Force observed that the regulatory regimes for external lighting adopted by overseas metropolises are basically unpinned by a lighting zoning system under which the limits on external lighting impacts for each lighting zone is determined having regard to the level of human activities, land use properties and prevailing environmental brightness. A lighting zoning system is usually adopted to categorize different locations and areas into various lighting zones. Different limits on external lighting impacts (such as light trespass, glare, sign luminance, etc.) are recommended for different lighting zones. The underlying reason for adopting a lighting zoning system to differentiate the level of control on external lighting is to reflect the different level of human activities, land use properties and prevailing environmental brightness in different areas within a city. Local residents within a particular neighbourhood will also have different expectation on the level of acceptable external lighting.

10. The International Commission on Illumination (CIE) and the Institution of Lighting Professionals[1] (ILP) both recommend the use of four lighting zones to classify different areas according to their prevailing environmental brightness as shown in the following table –

Category	Examples
E1: Intrinsically dark	National parks, areas of outstanding natural beauty
E2: Low district brightness	Rural, small villages, or relatively dark urban locations
E3: Medium district brightness	Small town centres or urban locations
E4: High district brightness	Town/city centres with high level of night-time activity

11. It should be noted that the lighting zones under the CIE/ILP's system are loosely defined. Each category is described in general terms. The CIE/ILP's zoning system has been adopted in some overseas regimes such as London. Some other cities like Shanghai and Sydney have not adopted the CIE/ILP standards and have developed their own zoning systems with regard to their local circumstances.

12. The Task Force has considered whether and how the various environmental lighting zones should be drawn up for Hong Kong. A number of options were explored and the assessment of the feasibility of those options is set out below.

13. One option is to classify each and every region in Hong Kong into different lighting zones, with a view to drawing up a "lighting zoning map" for reference by the interested parties such as light sensitive receivers, lighting owners, professionals or relevant government departments. However, due to the high density of buildings and co-existence of commercial and residential buildings, it might not be feasible to draw up a zoning map in Hong Kong. Indeed, owing to the close proximity of buildings, units within the same building may have different ambient lighting environment, depending on its orientation. For instance, apartments facing an open area may be having an entirely different lighting environment than those facing a large shopping centre nearby. It would therefore be difficult to come up with meaningful demarcation of lighting zones.

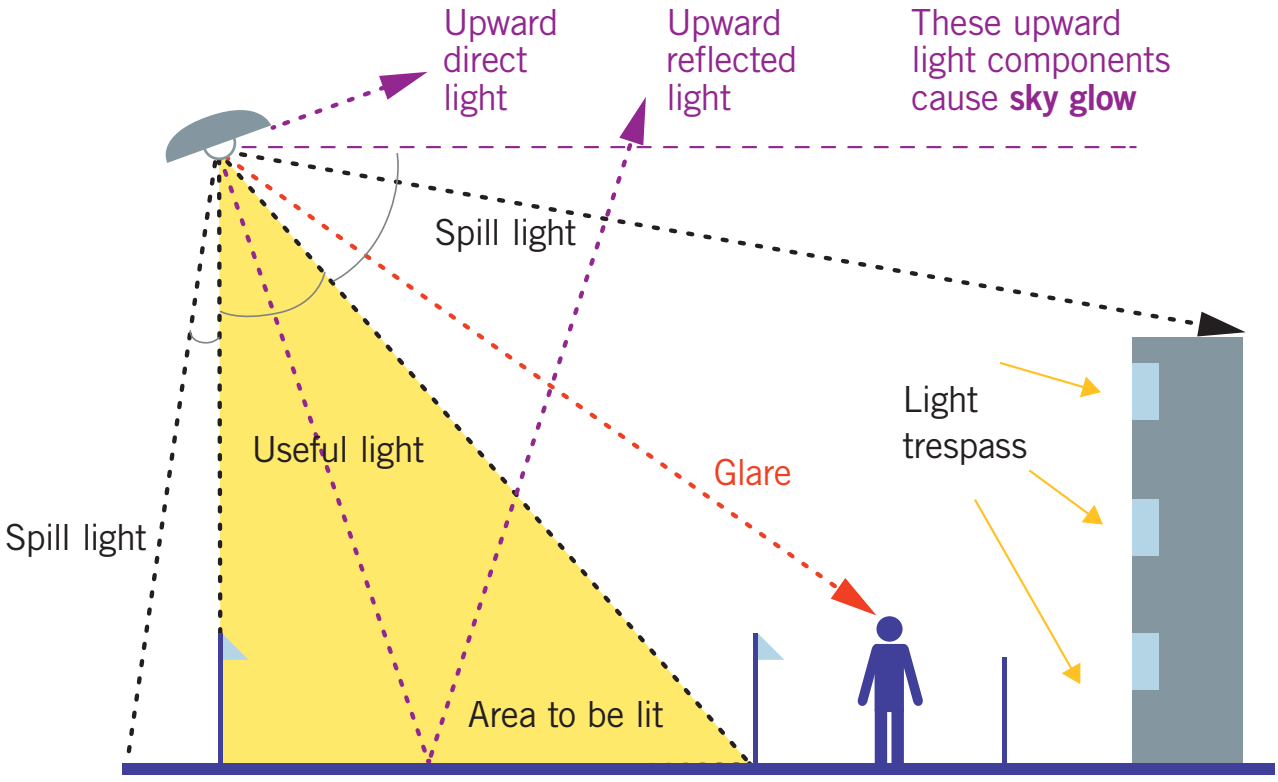
14. Another option is to draw up a "lighting zoning map" based on the intended land use of the areas as specified in the outline zoning plans (OZPs) promulgated by the Government, e.g. classifying a region zoned "Residential" in an OZP as "pure residential zone"[2], and a region zoned "Commercial" in an OZP as "mixed development zone"[3], etc. The Task Force has considered the feasibility of determining the lighting zone with reference to the OZP. However, given that the purpose of the approved OZP is to provide a statutory land use planning framework to guide the development and redevelopment, it does not necessarily reflect existing land use. It is also noted that under the OZP, a district may be divided into a number of zones for different uses such as commercial and residential. Therefore, even if the Government intends to draw up different lighting zones on the basis of the OZP, the extent of the separation of commercial and residential buildings might not be sufficient to limit the impact of external lighting from commercial buildings onto the nearby residents.

15. Following thorough discussion and visits to districts where external lighting has been a subject of complaints, the Task Force believes that it might not be practicable to draw up lighting zoning map due to the high density of buildings and the close proximity of commercial and residential buildings in Hong Kong.

Light Nuisance

16. The Task Force observed in some overseas metropolises with mandatory regulation of external lighting, the regulatory regimes are usually underpinned by a set of technical standards and related supplementary parameters on obtrusive light such as those formulated by the CIE.

17. The CIE is an independent, non-profit-making international organization devoted to worldwide cooperation and the exchange of information on all matters relating to the science and art of light and lighting, colour and vision and image technology. As it is one of the leading authorities on the subject of light and lighting, the Task Force has made extensive reference to the parameters and standards recommended by CIE standards. The major technical parameters from the light nuisance angle adopted in the reference standards recommended by CIE are light trespass, building façade and sign luminance, glare and sky glow. Different types of light nuisance are illustrated in the diagram below -



Light Trespass

18. Light trespass[4] is the spill light entering the premises through the windows. It is measured on a vertical plane, such as window surface of dwelling.

19. The Task Force observed during the site visit that, due to the high building density and close proximity of commercial and residential premises, light trespass in a particular premise can be caused by multiple light sources in the vicinity located at varying distances from the premise. In most cases, light trespass cannot be attributed to a single light source. Moreover, even if light trespass produced by each nearby light source is below the limit prescribed by the CIE[5], their cumulative effect on a particular premise may still exceed the limit.

20. It is further observed that due to the high building density in Hong Kong, the high level of light trespass caused by the ambient light is not uncommon. The Task Force is mindful about the enforceability of this parameter in Hong Kong as it can be caused by multiple light sources in this densely populated city with highly mixed development. It may not be always practicable to identify the contributing lighting sources and apportion the amount of light received by a complainant among these sources in a fair and objective manner. The application of this parameter to Hong Kong is not considered appropriate.

Building Façade and Sign Luminance

21. Building façade luminance and sign luminance[6] are both emitter-based parameters used to assess the amount of light coming from the surface of building façade and signs.

22. The Task Force observed during the site visit that light nuisance in relation to a building façade may have been caused by the spill light of the light source of the building façade, rather than the brightness of the building façade surface. It was also observed that the level of light emitted from a particular light source might not have a direct bearing on the level of light received in a particular premise, as light nuisance experienced by the light receptor would also depend on the distance between the light source and the light receptor.

23. Given that the amount of light emitted from building façade or sign luminance is not the only or the most important factor affecting the level of light nuisance experienced by the light receiver, the Task Force believes that the application of such parameters in Hong Kong may not be appropriate.

Glare

On Residents

24. Glare on residents[7] is caused by the direct view of bright luminaires causing annoyance, distraction or discomfort. During the site visit, Task Force members noted the majority of light sources measured on site during the site visit do not have glare values exceeding the limits prescribed by the CIE. In fact, the perceived discomfort of glare is affected by the viewing angle rather than the actual value of glare of the light source. In view of the difficulty in ensuring regulatory certainty, the Task Force believes that it would not be advisable to adopt this parameter as defined from the light receiver's point of view.

On Road Users and Pedestrians

25. Glare on road users is used to measure disability glare caused by the direct view of a road user to bright light sources from normal viewing directions causing annoyance, distraction or discomfort.

26. The impact of light nuisance on road users such as drivers of vehicles, cyclists and pedestrians are being regulated by the relevant statutory requirements in Hong Kong, though they were introduced from the perspective of road safety instead of light nuisance. Specifically, section 11 of the Advertisements Regulation (Cap.132B) prohibits any person from erecting or maintaining on or in any premises any sign which interferes with road traffic. Section 14(2) provides that upon conviction of a person for having erected any sign (occulting or otherwise) which causes interference to road traffic, the court may make an order for the removal of the sign by the Police. In view of the availability of relevant statutory regulations, additional measures to tackle glare on road users should not be necessary.

27. As regards glare on pedestrians, the CIE has developed a parameter to assess the impact of low mounted luminaires where the risk exists when pedestrians are looking straight into the luminaires. It is used

to assess glare which results in discomfort but without impairing the vision of objects and details. However, the CIE has admitted that they have little practical experience in applying this new approach. The Task Force noted that discomfort glare on pedestrians is mostly transient in nature, and that major developed countries such as USA, UK, Australia and Japan have not adopted any parameter, including the CIE's proposed parameter, to assess discomfort glare. In this light, the Task Force believes that there is no firm basis for regulating glare on pedestrians at this stage.

Sky Glow

28. Sky glow is the brightening of the night sky caused by artificial lighting and natural atmospheric and celestial factors[8]. Light emitted from external lighting installations, including light projected directly upwards and light reflected from the ground, can contribute to sky glow. Sky glow increases the brightness of the dark areas of the sky, and reduces the contrast of stars or other celestial objects against the dark sky background and affects astronomers' ability to view celestial objects.

29. The Task Force has explored the adoption of the upward light ratio (ULR) as a mandatory requirement. ULR is a parameter recommended by the CIE to set the proportion of the light of a luminaire and/or installation that is emitted at and above the horizontal plane when the luminaire(s) is mounted in its installed position. It is used to regulate the amount of light directed above the horizontal plane into the sky blocking out stars. Sky glow can be regulated by setting different ULR levels for different environmental zones. However, it will not be practicable for Hong Kong to adopt the zoning concept or to define the appropriate luminance level given the close proximity of buildings in Hong Kong. It appears that this parameter is not particularly relevant to the investigation of light nuisance complaints in Hong Kong.

Energy Wastage

30. The Task Force has explored the feasibility of minimizing energy wastage through the adoption of the relevant parameters used by

overseas institutions. It has been noted that Lighting Power Density (LPD) or Wattage/m^2 is a commonly used parameter for measuring energy efficiency for lighting of a vertical or horizontal area such as signs and building façade.

Energy consumed by external lighting

While it is difficult to estimate accurately the amount of electricity consumed by external lighting installations in Hong Kong, the amount of electricity consumed by street lighting may provide some useful reference. It is estimated that in 2012, street lighting provided by Highways Department consumed about 100 million kWh, or 0.25% of total electricity consumption in Hong Kong.

31. New York City (NYC) and Los Angeles (LA) have put in place statutory LPD limits from the energy wastage perspective (see **Annex 1**). The LPD standards for building façade are drawn up on the basis of the ambient lighting levels of different lighting zones, which in turn are defined with reference to the permitted developments in the respective zones (e.g. residential, agricultural, commercial, etc.). Based on the ambient lighting level of a particular zone, the relevant authorities will decide the permitted luminance level for building façades and then deduce the respective LPD level allowed accordingly. The maximum LPD allowed for building façade in a lighting zone with higher ambient lighting level is higher than that in a lighting zone with lower ambient level.

32. In NYC and LA, illuminated advertising signs are prohibited in zones with lower ambient illumination level such as agricultural, residential districts or some commercial districts. For areas where signs are permitted such as central commercial and commercial amusement districts, NYC has exempted lighting that is integral to advertising or directional signage from the LPD requirement, while LA requires such signs to comply with the relevant LPD standards drawn up with reference to the ambient lighting level of a particular lighting zone. On the other hand, LA has made clear in their legislation that, if more energy-efficient lighting installations[9] are used, the illuminated signs are not required to follow the LPD requirement.

33. The Task Force has considered the feasibility of applying the LPD requirements as a technical parameter to regulate signs and building façade in Hong Kong, and found that it would be difficult to apply the LPD requirement to Hong Kong due to the following reasons –

    (a) The parameter has not been adopted widely as a means to regulate external lighting. In fact, there is no internationally-recognised LPD standard being used to regulate energy consumption of external lighting installations. It is worth noting that the CIE has only recommended lighting designers to use luminaries and light sources that can direct light efficiently into the concerned area in order to minimize energy consumption. Even for metropolises that have adopted LPD standards such as NYC and LA, there is significant variance in their respective LPD standards.

    (b) The lack of objective reference to determine the appropriate LPD standards for building façade and illuminated signs creates practical difficulty in applying the LPD parameters. The starting point of establishing the standards for the building façade and illuminated signs is the appropriate ambient lighting level which is determined with reference to the permitted developments of a particular lighting zone as defined by the planning intention for that zone. However, the difficulty in developing lighting zones due to the close proximity of buildings in Hong Kong, and the fact that OZPs of the Planning Department does not necessarily reflect the current use of existing buildings have rendered it impractical for Hong Kong to adopt the zoning concept or define the appropriate luminance level.

34. This notwithstanding, the Task Force proposes that to minimize energy wastage, it would be useful to require all new external lighting installations and installations that are due for replacement to use energy efficient lamps.

Proposed Switch-off Requirement

35. Having reviewed all the parameters mentioned above, the Task Force concluded that the requirement to switch off external lighting after a preset time would be the most tenable option. It is relatively straight

forward and is easier to implement. It should to a large extent mitigate the possible light nuisance problems and minimize energy wastage, and will unlikely affect the normal business operations if the preset time can tie in with their operational need.

36. The Task Force agree unanimously that positive actions have to be taken to minimise the problems associated with light nuisance and energy wastage, and the introduction of the switch-off requirement at preset time would be the most effective and practicable measure. However, before recommending this new measure, the Task Force would like to ascertain the enforceability of the switch-off requirement and to listen to the views of the stakeholders and the public on the critical issues relating to the implementation of this requirement. These issues include –

    (a) the appropriate preset time;
    (b) scope of the switch-off requirement;
    (c) exemptions to be granted; and
    (d) implementation approach.

Preset time

37. As regards the specific time for switching off external lighting, there are two possible alternatives: (i) 11p.m. to 7a.m.; or (ii) midnight to 7a.m. Option (i) makes reference to the time adopted for regulating noise nuisance and will generally meet the expectation of a darker environment for sleep. Option (ii) has been proposed having regard to the need of some industries such as the entertainment, advertising and tourism sectors.

Scope

38. On the basis of the light nuisance complaints received, the Task Force proposes that the switch-off requirement be applied to **lighting installations of decorative, promotional or advertising purposes that affect the outdoor environment** regardless of whether the lighting installations are interior (e.g. advertising sign installed behind windows) or exterior. These may include shop signs, advertising signs, video walls and decorative lighting for facades and building features.

39. The Task Force considers that the proposed switch-off requirement should not apply to lighting necessary for security, safety or operational reasons, such as road/street lighting, lighting at public transport interchange or terminus, airport and container port, air and marine traffic lighting, outdoor car parks, construction sites, buildings undergoing major retrofitting works, road/street number signs, and testing of external lighting that cannot be completed before the preset time due to requirements imposed by relevant government authorities, etc.

40. Notwithstanding the above elaboration on the scope of the proposed switch-off requirement, the Task Force recognizes that there is no easy and clear-cut definition for external lighting even along the above line. There could be grey areas, such as directional signs to shops that remain open after the preset time, signs showing the business hours or other information about the shops after business hours, etc..

Exemptions

Shop-front Sign

41. The Task Force observed that certain types of businesses such as entertainment facilities might remain open after the preset time, and hence their shop-front signs might be exempted from the switch-off requirement during their business hours. Shops on upper floors may consider erecting signs on the ground floors of their buildings to indicate that they are still open after the preset time. Their signboards on higher levels should not be exempted as they stand a high chance of causing persistent nuisance to the premises next to the signboards. The Task Force is also aware that light trespass effect caused by non-static signs is generally more prominent and irritating than that of static signs, and considers that exemption should not be granted for any non-static lighting for decorative, promotional or advertising purposes (e.g. flashing signs, video walls, etc.).

Decorative Lighting during Festive Seasons

42. To provide flexibility during the festive holidays, the Task Force believes that exemptions may be granted to decorative lightings (static and non-static) two nights/ early mornings before the respective statutory holidays of Christmas, New Year and Lunar New Year until the morning of the day following the holidays. For example, as the

public holidays for Christmas in 2013 fall on 25 and 26 December, subject to the preset time, exemption from the switch-off requirement for decorative lightings should start from 11:00 pm (or mid-night) on 23 December until 7:00 am of 27 December.

43. There are questions as to whether signs showing hotel names displayed at the top of the buildings should be exempted from the switch-off requirement. The Task Force believes that hotels may install lighting installations in the same way as shop-front signs or lighting installations on the ground floor to show that they are in operation after the preset time, if necessary. Given the small size of Hong Kong, there will be no practical need for the hotels to display signs on top of the buildings to show their locations as in overseas countries.

Implementation Approach

44. The Task Force noted the major findings of the Study commissioned by the Government in 2009 (see **Annex 1**), which shows that other major metropolitan cities do not have a uniform approach to regulate external lighting from the light nuisance and energy efficiency perspectives. For example, Tokyo and Singapore do not impose any mandatory control on external lighting. The Tokyo government issues guidelines without binding force for all external lighting installations. As for Singapore, they have made a policy statement without implementing any mandatory regulation. In cities where regulation with limited scope is in place, such as Sydney, Los Angeles and New York City, the applicability of mandatory control is confined to new lighting installations only and excludes the stock of existing installations. Of the cities covered by the Study, only Shanghai, London and Frankfurt have introduced mandatory regulation of new and existing external lighting. The regulatory regimes are guided by a set of technical standards and parameters determined with regard to a lighting zoning system.

45. The Task Force also noted the regulatory approach adopted by the French Government which has implemented a mandatory switch-off requirement. Illuminated signs (including advertising signs) have to be switched off between 1 a.m. to 6 a.m.. Lighting of building façade cannot be lit until sunset. Non-compliance will be subject to a fine of EUR750. Areas of significant tourist and cultural interests such as Champs-Elysées and hotels, however, are exempted from the mandatory switch-off requirement.

46. In the local context, the Task Force considers that there are different options for implementing the switch-off requirement, ranging from the promulgation of voluntary guidelines; the introduction of a charter scheme whereby owners and the management of the external lighting installations pledge to switch off their lighting installations at preset time; and the introduction of legislation to mandate the switch-off requirement. These options are not mutually exclusive. There are suggestions that legislation should be introduced though a charter scheme can be implemented during lead time required for the legislative process. It has also been suggested that a charter scheme be implemented first and the need for legislation should be subject to the outcome of the charter scheme. In assessing the tenability of these options and developing appropriate regulatory models, we will need to give due consideration to the following factors –

    (a) nuisance caused by external lighting on some residents and gravity of the problems as perceived by the community at large with regard to health impact, possible mitigation costs, and energy wasted;

    (b) apart from the environmental angle, the social and economic implications of different approaches in implementing the proposed switch-off requirement;

    (c) how to define in a clear and unambiguous manner the scope of external lighting to be covered in the switch off requirement. The challenge may be greater if a mandatory approach is to be adopted, otherwise the enforceability of the legislative control will be compromised;

    (d) if a mandatory approach is preferred, the severity of the penalty against non-compliance taking into account the deterrent effect and the nature of the breach;

    (e) lead time for the legislative process;

    (f) regulatory costs, including enforcement costs; and

    (g) close monitoring and review of the effectiveness of any voluntary, charter or mandatory measure which may be introduced.

"Light nuisance" in the UK

From the nuisance angle, reference may be drawn from the regulatory regime in the UK where light nuisance is a "statutory nuisance" under the Clean Neighbourhoods and Environment Act 2005. Light nuisance is defined as light emitted from premises so as to be prejudicial to health or nuisance; and nuisance is, judged by the standard of a reasonable man, an activity that amounts to an unreasonable interference with the use and enjoyment by the claimant of his/her land. Therefore, complaints against light nuisance are usually lodged by residents affected by lighting and cannot be lodged by a man in the street. There are no numeric standards against which to measure light nuisance in the UK law, and local authorities may make reference to technical parameters and assessed each complaint on a case-by-case basis. The enforcement authorities at the local level will consider various factors like impact, locality, time, frequency, duration, convention, importance and avoidability to determine if the case in question is causing nuisance or not.

Possible social and economic impacts

According to the findings of the opinion survey commissioned by the Government in 2009, respondents have mixed feelings and opinions towards external lighting in Hong Kong. More than 70% of respondents had the impression that there was "light pollution" in Hong Kong. At the same time, about 78% of residents in general considered that external lighting installations helped beautify the environment and about 87% of residents in general considered that external lighting helped provide safe environment and reduce crime. More than 90% of tourists considered external lighting helped promote tourism. A careful balance between the needs of different light receptors should be maintained.

Health impact

Research studies conducted in different countries so far have not come to any conclusive view on any direct relationship between light exposure and health problems, but possible health effects of light pollution, if any, may include glare, nuisance and sleep problems. The possible effects or problems caused by artificial lighting at night are non-specific, and possible health problems (e.g. sleep problem) in an individual are often multi-factorial, which may or may not be related to light pollution. Some studies have indicated that while exposure of high level of light for a prolonged period of time at night may suppress melatonin, light trespass through residential windows is an unlikely cause of melatonin suppression given its low light level, particularly with the eyes of the residents closed.

Defining the issues and breaches in legal terms

Legislation requires unambiguous definitions of "external lighting", "excessive" external lighting, "shop-front signs", etc. to ensure effective enforcement and to provide regulatory certainty. Further study of the appropriate legal definitions would be necessary.

Punitive measures against non-compliance

If a mandatory approach is taken, it is for consideration whether non-compliance should attract criminal sanctions. The nature and the extent of the sanctions to be proposed would need to be commensurate with the gravity of the breaches.

Mitigation costs

Some people consider that receptors may mitigate the impacts of external lighting to a certain extent by blinds or curtain, though the effect may not be entirely satisfactory.

Lead time for legislative process

Compared to the voluntary approach, longer lead time is required for law drafting, including the development of clear definitions of the issues and breaches; and building of community consensus on the content of the legislation.

Regulatory and Enforcement Costs

There may be considerable enforcement difficulty in identifying responsible parties, gathering evidence and instigating legal proceedings, unless the scope of activities and persons subject to regulation are clearly defined.

47. The pros and cons of the options identified by the Task Force are set out more specifically below.

Option I: Mandatory Regulation to be Preceded by a Charter Scheme

48. Having examined the overseas regulatory experience and considered the issue set out above, some Task Force members feel strongly that a mandatory approach should be adopted to implement the switch-off requirement through the introduction of relevant legislation for the following reasons –

    (a) noting the long lead time required for the legislative process, they believe a charter scheme with pledges made by major stakeholders, including owners/operators of external lighting installations, should be introduced before the new legislation takes effect;

(b) they are aware that the introduction of legislation to stipulate the switch-off requirement, the power of the enforcement authorities and the penalties for non-compliance can produce more deterrent effect in tackling the nuisance and energy wastage problems brought about by external lighting. Legislation can avoid the major drawback of any non-mandatory regulation, namely the lack of statutory sanctions to ensure compliance; and

(c) in the absence of legislative control or commitment to introduce legislation in the near future, they are concerned that certain building management/owners may refuse to pledge to switch off their external lighting installations under the charter scheme on the ground that the Government cannot provide a level-playing field for all owners/operators of the advertising and shop signs if some owners/operators can choose not to sign up to the charter. Difficulty in securing support from all owners and operators of external lighting installations for the charter scheme would render it necessary for the Government to pursue legislation.

49. The mandatory approach, due to its deterrent effect, is likely to be well received by the parties who are concerned about the energy wastage problem and those who are adversely affected by external lighting installations. Proposal for legislation will be taken by these stakeholders as a positive response to their complaints against the light nuisance and energy wastage problems caused by external lighting.

Option II: Implement a Charter Scheme and Consider Legislation in the Light of the Outcome of the Charter Scheme

50. On the other hand, other members of the Task Force believe that it would be more tenable to introduce a charter scheme to implement the switch-off requirement first. Whether legislation should be pursued would be contingent on the outcome of the charter scheme, i.e. the Government should pursue legislative control if the charter scheme has proved to be ineffective in addressing the problems of light nuisance and energy wastage arising from external lighting.

51. Some members of the Task Force believe that while it is necessary to enhance the regulation of external lighting, the justifications for pursuing legislation have yet to be fully developed and firmly

established. They believe it would be premature to propose legislative or mandatory control before the Government implements and examines the outcome of a charter scheme due to the following reasons -

(a) on the basis of its document-based review as well as visits to places that are subject to light nuisance complaints, Members observe that judging from the complaint statistics, the problem of external lighting nuisance is in general localized in districts with dense and mixed commercial cum residential developments like Mongkok and Causeway Bay. However, in the absence of a lighting environmental zoning system, legislation to regulate external lighting is likely to entail mandatory switch-off requirement applicable to the entire territory, including areas of tourist interests and places that have not attracted any light nuisance complaints. In districts or areas where external lighting has not been a source for complaints, the owners of external lighting installations as well as the residents in the vicinity may find legislative control unnecessary or even undesirable;

(b) proposing statutory control without first establishing the weakness of non-mandatory approach may attract strong reaction and resistance from stakeholders who have yet to adapt to the new requirement. This may lead to requests for extensive exemptions from the statutory requirements and sanctions, which will inevitably compromise the scope and the deterrent effect of any statutory regulation. On the other hand, if there is solid evidence to show that the charter scheme is unable to bring about sufficient improvement, the Government will have stronger ground to take a tougher stance when preparing the new legislation;

(c) regulation of external lighting has yet to become an established or universally accepted practice, and there are a lot of uncertainties associated with the application of mandatory control to Hong Kong, including the definition of key terms and the actual impact on Hong Kong's night scene. The implementation of a charter scheme can help the Government accumulate regulatory experience and assess the feasibility of defining key terms such as light nuisance and the responsible parties, which are necessary for the purpose of law drafting. The implementation of the charter scheme can also serve as a "trial scheme" to help the community to visualize the impact of the mandatory switch-

off requirement; and assist the Government in understanding the response of the public and the tourists to the switch-off requirement as well as the impact on various industries and businesses such as tourism, and the retail, entertainment and catering businesses, etc.; and

(d) some members believe that it would be more prudent for the Government to consider legislation only after such a "trial scheme" has been implemented. If the trial scheme turns out to be ineffective due to, among other reasons, refusal of the concerned parties to comply with the switch-off requirement at their own initiatives, the Government would have more solid and stronger justifications to introduce legislation with stronger deterrent effect.

52. Understandably, there will be concerns about the effectiveness of merely recommending a charter scheme without firm commitment to legislation which would be contingent on the outcome of the charter scheme. To address this concern, it would be advisable to provide a timetable for reviewing the need for legislation. It might be useful to set the target of reviewing the effectiveness of the charter scheme two years after its promulgation. In reviewing the need for legislation, the Government may take into account factors such as the response of the owners/management external lighting installations to the Government's invitation to join the charter scheme, the compliance record of the participants in the scheme (i.e. whether their external lighting installations are indeed switched off after the preset time), and public perception of the extent of the light nuisance problem following the promulgation of the charter scheme.

53. For the sake of completeness, in addition to more specific recommendation on the switch-off arrangement, the charter scheme may also cover some other general good practices on the design, installation and operation of external lighting installations as currently set out in the Guidelines.

Views invited

54. Having thoroughly studied and discussed the technical issues associated with the regulation of external lighting, **the Task Force firmly believes that the requirement to switch off external lighting of decorative, promotional or advertising purposes after the preset time is the appropriate way forward for Hong Kong.**

55. To take forward the above recommendation, the Task Force would like to listen to the views of the stakeholders and the public on the following issues –

    (a) the appropriate preset time (paragraph 37);
    (b) scope of the switch-off requirement (paragraph 38-40);
    (c) exemptions to be granted (paragraphs 41-43); and
    (d) the implementation approach to be adopted, i.e. apart from implementing a charter scheme as soon as possible, whether the Government should commit at the same time the introduction of legislation to mandate the switch-off requirement (paragraphs 44-53).

56. The Task Force is aware that the issue of external lighting is a complicated one, and attracts a wide range of response from different sectors of the community. The Task Force would give careful consideration to comments received before drawing up recommendations for the Government's consideration. The Task Force looks forward to views and comments from stakeholders and the public for charting the way forward.

57. Please submit your views to the Task Force by 18 October 2013 through the methods below. Please specify on your submission "Task Force on External Lighting Stakeholders and the Public Engagement Exercise".

    Email: hollyip@hkpc.org;

    Fax: (852) 3187 4534; or

    Mail: Environmental Management Division,
    3/F., Hong Kong Productivity Council Building,
    78 Tat Chee Avenue, Kowloon.

Quoting Your Views

58. Please note that the Task Force would wish, either during private or public discussion or in any subsequent reports, to be able to refer to and attribute views submitted in response to this Document for Engaging Stakeholders and the Public. Any request to treat all or part of a response in confidence will be respected, but if no such request is made, it will be assumed that the response is not intended to be confidential and the Task Force may disclose or publish all or part of the views received and disclose the identity of the source.

ANNEX 1

Consultancy study on external lighting commissioned by the Government in 2009

Scope of study

The issue of tackling energy wastage and light nuisance of external lighting is a complex one. In addition to having a wide-ranging impact on every sector of the community, the success of such measures will depend on the enforceability which, in turn, relies on the formulation of an objective or commonly-accepted definition of energy wastage or nuisance. To determine the way forward, the Government commissioned a consultancy study on energy wastage and light nuisances of external lighting in 2009. The study covers the following key areas that are important dimensions for consideration in formulating our measures to tackle the problem –

(a) experience of metropolises similar to Hong Kong in handling external lighting problems;
(b) survey on views of relevant stakeholders; and
(c) research on the usage of external lighting in various representative areas in Hong Kong.

Major findings

Experience of Metropolises

2. Eight metropolises, namely Tokyo, Singapore, Shanghai, Sydney, New York, Los Angeles, London and Frankfurt, have been selected for studying their respective means to deal with external lighting problems. The study finds that the cities vary widely in their regulatory approaches and scope of coverage. The following summarizes the differences.

Mandatory vs voluntary

3. Of the cities surveyed, Tokyo and Singapore do not adopt any mandatory regulation over the management of external lighting. The Tokyo government adopts, for all external lighting installations, non-mandatory approach and guidelines without binding force; while Singapore made a policy statement without mandatory regulation or

voluntary guidelines. Among the cities surveyed, none has in place full-blown mandatory regulation for external lighting both as a light nuisance and energy efficiency. Where regulation with limited scope is in place, some cities further restrict the applicability of their regulatory framework to new lighting installations only, i.e. excluding the stock of existing installations. The remaining cities take a mandatory, yet partial, approach in the regulation of external lighting.

Light nuisance vs energy wastage

4. London, Frankfurt, Shanghai and Sydney have put in place legislation or mandatory requirement to regulate light nuisance caused by external lighting and empower authorities to order abatement. The enforcement authorities assess light nuisance complaints on a case-by-case basis with regard to guidelines developed locally (e.g. those recommended by independent professional associations) for parameters to measure and control the impact of external lighting. In New York and Los Angeles, legislation relating to external lighting aims to prevent energy wastage of lighting installations. It is important to point out that the regulatory framework of all these cities is underpinned by a set of reference guidelines/standards spelling out, for instance, benchmarks of lighting impact limits in different environmental zones of the cities, technical parameters for measuring the impact of outdoor lighting, or the maximum lighting power allowed for new outdoor lighting installations by type of use.

New vs existing installations

5. The mandatory regulations in London, Frankfurt and Shanghai cover both existing and new lighting installations. Sydney's regulations apply only to new installations. For cities regulating on energy wastage (i.e. New York and Los Angeles), their regulations apply only to new installations.

Zoning approach

6. In seven out of the eight selected metropolis (except Singapore), a lighting environmental zoning system is in place or has been proposed to divide different lighting environment for different levels of commercial or residential activities to control outdoor lighting. In London, for example, the guidelines seek to categorize different areas in the city into various lighting environmental zones[10] and recommend preset times[11] for external lighting. The enforcement authorities would also take into account factors such as duration, frequency, and

intention of use of the external lighting installations in assessing the complaints.

7. A summary of legislative control on external lighting in the eight selected metropolises is set out in the table below –

Metropolis	Against energy wastage		Against light nuisance	
	Applicable to new installations	Applicable to existing installations	Applicable to new installations	Applicable to existing installations
Tokyo	No	No	No	No
Singapore	No	No	No	No
Sydney	No	No	The City of Sydney Exterior Lighting Strategy sets out requirements for consent from the City of Sydney Council in private sector development applications for illuminated signage, exterior lighting of buildings and under-awning lighting. Lighting proposals submitted for Development and/or Construction Certificate Approval are required to comply with the development control policies stated in the lighting strategy. The City of Sydney Council will consider lighting proposals and issue construction approval.	No
London	No	No	The law treats light nuisances as a kind of statutory nuisance and empowers the authority to order the abatement of nuisance. Enforcement relies on assessment on a case-by-case basis taking account of various factors, including guidelines or international reference standards. Offender of statutory nuisances is subject to imprisonment or a fine. New projects on external lighting are required to have planning approval by the local planning authority.	

Metropolis	Against energy wastage		Against light nuisance	
	Applicable to new installations	Applicable to existing installations	Applicable to new installations	Applicable to existing installations
Frankfurt	No	No	The law provides a framework of making reference to permissible illuminance and luminance limits and further restrictions on those limits during the night. Enforcement relies on assessment on a case-by-case basis taking account of various factors, including guidelines or international reference standards. The authority can issue orders to ensure compliance and in case of non-compliance, prohibit the operations of the installations.	
Shanghai	No	No	The law stipulates that external lighting "should not affect the normal living of nearby residents" and empowers the authority to order the abatement of nuisances.	
New York City	The law governs and prescribes the limits of energy consumption of new external lighting installations with reference to Energy Conservation Construction Code of New York State. In case of non-compliance, design professionals and contractors can be fined and/or denied certain privileges of licensing by the Department of Buildings.	No	No	No
Los Angeles	The law governs and prescribes the limits of energy consumption of new external lighting installations with reference to California Energy Code. In case of non-compliance, design professionals and contractors can be fined and revoked of Certificate of Occupancy by Los Angeles Department of Buildings and Safety.	No	No	No

Survey on Public Opinion

8. On the opinion survey, views had been collected from around 2 700 respondents from various sectors in Hong Kong, including residents, light sensitive receivers, shop owners, customers, building owners, property management sector, tourists, interest groups, professional institutions and relevant trade associations.

9. The survey finds that respondents have mixed feelings and opinions towards external lighting in Hong Kong. More than 70% of respondents had the impression that there was "light pollution" in Hong Kong. Some considered that there were too many external lighting installations, their sizes were too big and they were too bright. About 40% of residents in the "light sensitive receivers"[12] group considered that external lighting had adversely affected their daily life, work or health, but less than 10% of residents in general had the same opinion.

10. On the other hand, a large proportion of respondents acknowledged the benefits of external lighting. About 78% of residents in general considered that external lighting installations helped beautify the environment, boost Hong Kong's image as a "dynamic metropolis" and promote tourism. About 87% of residents in general considered that external lighting helped provide safe environment and reduce crime. The corresponding percentages of tourists who held these views were even more overwhelming (more than 90%).

Research on External Lighting in Hong Kong

11. The consultancy study also researches into the usage of external lighting in Hong Kong. External lighting installations in a number of representative areas, as follows, have been measured and assessed by technical parameters –

    (a) Shun Lee Estate in Kwun Tong (urban residential area);
    (b) Des Voeux Road Central/ Charter Road in Central (commercial area);
    (c) Peterson Street/ Great George Street in Causeway Bay (commercial-cum-residential area);
    (d) Nathan Road/ Sai Yeung Choi Street South in Mongkok (commercial-cum-residential area);

(e) Yan King Road/ Kai King Road in Tseung Kwan O (New Town area); and

(f) Clear Water Bay Country Park with nearby villages, Tai Hang Hau and Tai Wan Tau in Sai Kung (rural area).

12. The selected areas are considered representative of various districts in Hong Kong with different land use properties, including commercial, commercial-cum-residential, urban residential, new town and rural areas. The research in these areas sheds some light on the usage and impacts of external lighting in different districts.

13. The technical parameters adopted include light trespass to residents, glare effect due to direct viewing from residents and sign/building façade luminance, etc. The measurements obtained have been compared with limits on lighting impacts recommended the Commission Internationale de l'Eclariage (CIE) – International Commission on Illumination. The use of CIE guidelines as the basis of comparison is for reason of convenience in the absence of any local standards.

14. The study finds that light nuisance is a "localized" problem, which mainly occurs in commercial-cum-residential areas like Mongkok and Causeway Bay. These areas have high building density and intermingling of shops, entertainment venues and residential buildings is common. In other areas where the use is predominately commercial or residential and in new towns, light nuisance may not be a prevalent problem. For example, the average assessed values on glare, sign luminance and building façade luminance were all within recommended limits in the surveyed areas except Mongkok. However, the assessed luminance of illuminated signs was found to be spreading over a wide range, indicating that there might be individual cases where the signs might be too bright.

15. As regards light trespass, its levels have been assessed before and after certain preset times (say, after 11pm or midnight). Before the preset times, the light trespass levels on the vast majority of residents were found to be within recommended limits in all surveyed areas, except Mongkok and Causeway Bay. However, the proportion of residents affected by light trespasses with values exceeding recommended limits was found to increase substantially after the

preset times. A possible explanation of this phenomenon is that professional associations usually recommend more stringent limits on light trespass after certain hours to provide a darker environment at night. The findings also suggest that the ambient light level in Hong Kong at night is relatively high as many lighting installations have not been switched off after normal operation hours.

ANNEX 2

Guidelines on Industry Best Practices for External Lighting Installations

The guidelines below suggest some best practices on external lighting installations that Government departments and the private sector should observe.

Introduction

1. External lighting in Hong Kong exist in many different forms and some typical examples include signs (either internally illuminated or externally illuminated), lighting for facades and features, lighting outside buildings (including those for shops), lighting for sports fields and playgrounds, external video structures (e.g. video walls, display panel).

2. The guidelines in this document aim to outline some general good practices on design, installation and operation of external lighting for the reference of lighting designers, contractors, owners and users with a view to minimizing the adverse impacts arising from external lighting.

3. The guidelines are not intended to cover road lighting maintained by Highways Departments (HyD), which should comply with the Public Lighting Design Manual issued by HyD.

4. For easy reference, the guidelines are grouped under the following sub-headings: operating hours for lighting, automatic controls for lighting, light pollution control measures, energy efficiency measures, lighting project design planning, glare prevention to road users, and advertising signs.

5. The good practices stipulated in this document are not exhaustive. Relevant professionals, such as experienced practitioners and consultants in the lighting field, should be consulted for further advice if necessary.

Operating hours for lighting

6. Limiting the use of external lighting after a specified time at night could reduce the possibility of light pollution and energy consumption and in turn foster a good living environment for everyone. It is advisable to :

   (a) Switch off the external lighting when not needed or after business hours.

   (b) Switch off the external lighting after certain time at night (say, after 11pm as recommended by International Commission on Illumination (CIE))[13].

   (c) Maintain only essential lighting (e.g. lighting for safety and security) at the acceptable level as required.

   (d) Feature lighting serve to enhance a particular feature/building/ structure may be subject to even more stringent control as to their lit time.

Automatic controls for lighting

7. Automatic controls could help reduce adverse impacts of external lighting by optimizing the use of the external lighting. Examples of such measures include :

   (a) Incorporate automatic control (e.g. timer switch) to switch off the external lighting when not needed or after business hours, or when concerned premises are not in use, or after certain time at night (say, 11p.m. as recommended by CIE).

   (b) Incorporate automatic control (e.g. photo-sensor for maximizing daylight utilization) to switch on the external lighting only when necessary.

   (c) Incorporation of occupancy sensor control (e.g. motion sensor or passive infra red sensor) to switch on the external lighting from off or dimmed state where applicable.

Light pollution control measures

8. Measures to reduce light pollution impacts (e.g. light overspill, light trespass, glare and sky glow) arising from external lighting include :

   (a) Avoid over-illumination of signs, facades, shop fronts, video walls and facilities with lighting. Over-illumination will increase possibility of light pollution.

   (b) Position and aim the lighting properly to avoid overspill of light to outside the area being lit up.

   (c) For lighting up vertical structures (e.g. signs & façade), direct the beam to the structures and avoid overspill of light.

   (d) Use lighting with appropriate shields, baffles, louvers and cut-off features to prevent light overspill to nearby residence and into the sky, and glare from the light source. Where necessary, consider to use luminaires with appropriate cut-off classification. To avoid imposing additional wind load which will affect the structure of the existing lighting columns and foundation, please consult relevant professionals in the design of shields, baffles, louvers, etc. for retrofit works.

   (e) Switch off the lighting when it is not operationally required or dim down the lighting when a high illumination level is not essential (e.g. after business hours and where the lighting devices are not for security purposes).

   (f) Avoid using video walls or signs with flickering, colour changing or movement effect in cases where the video walls or signs are facing directly at residents (e.g. when the lighting device and residential premises are on the opposite sides of a road or street). Where unavoidable, reduce the period of operation and/or the flickering rate.

   (g) For signs with LEDs, use suitable type of LEDs (e.g. LEDs with baffles, louvres or optic diffusers to control light distribution) to reduce sign luminance and light overspill and to prevent glare from direct view of the light source.

(h) Avoid directing light at glass curtain wall, shiny shop front display panel, or light colour fabric materials (e.g. used in shade structures in parks, amphitheatres or piazzas) etc. to prevent light overspill and nuisances caused by reflection of light.

Energy efficiency measures

9. Measures to enhance energy conservation and energy efficiency of external lighting include :

(a) Avoid over-illumination of signs, facades, shop fronts and facilities with lighting. Over-illumination will consume more lighting energy.

(b) Use more energy efficient lighting equipment, e.g. T5 fluorescent light, compact fluorescent lamp (CFL), ceramic metal halide (CMH) lamp, metal halide lamp, LED, and electronic ballast.

(c) Dim down lighting as applicable and switch off lighting when it is not needed (e.g. after business hours) by automatic or manual control.

(d) Incorporate sectional controls such that the sections of lighting not operationally required are switched off or dimmed down as appropriate.

(e) Clean up the external lighting (as part of regular maintenance) to reduce lumen depreciation due to dusts and wastes on the lighting. Adequate provision for easy access and/or appropriate facilities should be allowed to facilitate regular cleaning of external lighting.

Lighting project design planning

10. Good design planning for an external lighting project could help prevent occurrence of adverse impacts from the lighting installations. Design and planning measures include :

(a) Assess the impacts of external lighting as part of the lighting design development process before firming up the lighting design for installation. Some aspects to be considered may include critical or sensitive locations that the lighting may affect, ambient

brightness condition, orientation and positioning of external lighting, types of external lighting, lighting energy consumption, and importance of lighting pollution impacts.

(b) Review whether the external lighting will have the possibility of shining outside the area it intends to light up, affecting neighbourhood or the sky. If so, refine the lighting design, consider re-positioning the lightings and adjusting the aiming angles, and choose luminaires with suitable light distribution characteristics (e.g. light pattern, beam spread, cut-off angle) or light control devices (e.g. shields and baffles) as appropriate.

(c) For floodlighting, ensure the beam angle of the lighting from the vertical is not excessive and the lighting is fitted with shields and cut-off features to control glare, and if possible, use lower intensity lamps to reduce glare from the light source.

(d) Whenever there is residence nearby, use lighting with appropriate shields, baffles, louvers and cut-off features to prevent light overspill, and glare from the light source. Where necessary, consider using luminaires with appropriate cut-off classification.

(e) For sports lighting, use luminaires with double asymmetric beams as appropriate so that the front glazing is kept nearly parallel to the surface being lit to minimize overspill light. The light output should be adjustable to different illumination levels to meet different purposes (e.g. training/competitions). For floodlighting provision, adverse effects to nearby residents due to light nuisance such as glare should be thoroughly assessed before the installation of the lighting and suitable measures should be taken to minimise the impact to a level acceptable to nearby residents. Consideration should be given to take into account the physical environment of the facilities to be provided with floodlighting with a view to reducing the light nuisance as well as to provide suitable light-breaker to reduce the glare if necessary. Special care should also be taken to avoid over-concentrating the floodlights on a few lighting towers/columns which could cause light nuisance or glare problems to nearby residents.

Prevention of glare to road users

11. Glare from external lighting may affect road users resulting in safety concerns. Measures to reduce such glare impact include :

    (a) Ensure the external lighting is appropriately positioned, aimed or shielded so that illumination of nearby roads will not be adversely affected.

    (b) Ensure appropriate type of lighting is used (e.g. lighting with suitable light distribution pattern, or appropriate cut-off classification) to reduce glare impact on road users.

Advertising signs

12. Advertising signs should also comply with the advice and guidance on safety, health and related issues stipulated in the Practice Notes for Authorized Persons and Registered Structural Engineers APP-126 and the Guide on Erection & Maintenance of Advertising Signs issued by Buildings Department.

Environment Bureau
Environmental Protection Department
Electrical and Mechanical Services Department
January 2012

ANNEX 3

Task Force on External Lighting

MEMBERSHIP

Chairman: Dr Albert Chau Wai-lap

Members:
Mr Charles Nicholas Brooke
Mr Cary Chan
Ir Simon Chung Fuk-wai
Dr Chung Tse-ming
Mr Mason Hung
Mr Lam Kin-lai
Mr Edwin Lau
Mr Eric Lau Kim-wai
Mr Alfred Lee Tak-kong
Mr Andrew Lee Chun-lai
Mr Ellis Wong Chuen
Mr Rex Wong Siu-han
Mr Randy Yu

TERMS OF REFERENCE

To enhance public awareness of and address concerns over external lighting, the Task Force is to advise the Government on -

(a) the direction and focus of publicity and public education;
(b) the technical standards and related supplementary parameters for external lighting levels that should be developed for Hong Kong to suit local circumstances; and
(c) the appropriate strategy and measures for tackling nuisance and energy wastage problems caused by external lighting.

Footnotes

1 ILP is UK's largest and most influential professional lighting association. ILP has organised training seminars on tackling light nuisances for environmental health officers and planning officers in the UK. The ILP's Guidance Notes for Reduction of Obtrusive Light are often referenced to by practitioners in UK when dealing with external lighting issues.

2. This may correspond to zone E3 under the CIE/ILP system.

3. This may correspond to zone E4 under the CIE/ILP system.

4. Light trespass is the luminous flux per unit area at a point on a surface (unit: lux or lx).

5. In the absence of any local standards, CIE guidelines are used as the basis of comparison only for reason of convenience.

6. Building façade luminance and sign luminance are the visual stimulus creating the sensation of brightness (unit: candela or cd /m^2).

7. Glare on residents is the luminous intensity emitted by luminaires in directions towards residents (unit: candela or cd).

8. The natural component of sky glow has five sources, including sunlight reflected off the moon and earth, faint air glow in the upper atmosphere, sunlight relfected off interplanetary dust, starlight scattered in the atmosphere, and background light from faint, unresolved stars, etc.

9. For example, high pressure sodium lamps, metal halide lamps, neon or cold cathode lamps, fluorescent lamps, light emitting diodes, compact fluorescent lamps or electronic ballasts

10. Different limits on external lighting parameters may be prescribed for different types of environmental zones (e.g. commercial, residential, rural, etc.), and the classification of such zones may depend on human activities, land use properties and the prevailing brightness of the environment.

11. Preset times, or "curfew hours", generally refer to the time after which stricter requirements for the control of obtrusive light apply.

12. In the opinion survey study, "light sensitive receivers" refers to those persons who were more affected by external lighting, including people whose working or living locations are exposed to more external lighting in the surrounding.

13. International Commission on Illumination (CIE), an international professional body on light and lighting, suggests curfew at 11:00p.m., unless otherwise specified, after which stricter requirement for control of obtrusive light will apply.

Annex C

List of organisations invited to the stakeholder engagement session on 28 August 2013

Green groups

1. Business Environment Council
2. The Conservancy Association
3. Friends of the Earth
4. World Wide Fund
5. Green Power
6. Green Sense
7. Green Council

Professional bodies

8. HK International Facility Management Association
9. School of Public Health, The University of Hong Kong
10. School of Public Health, The Chinese University of Hong Kong
11. Department of Physics, The University of Hong Kong
12. Department of Physics, The Chinese University of Hong Kong
13. Department of Physics, The Hong Kong University of Science and Technology
14. School of Life Science, The Chinese University of Hong Kong
15. Department of Applied Physics, The Hong Kong Polytechnic University
16. School of Energy and Environment, The City University of Hong Kong
17. Department of Physics and Material Science, The City University of Hong Kong
18. Department of Physics, The Baptist University of Hong Kong

Trade associations

19. The Hong Kong General Chamber of Commerce
20. The Chinese General Chamber of Commerce
21. The Chinese Manufacturers' Association of Hong Kong
22. Federation of Hong Kong Industries
23. Hong Kong Retail Management Association
24. Hong Kong Federations of Restaurants and related Trades
25. The Association of Accredited Advertising Agents of Hong Kong
26. The Hong Kong Restaurant & Eating-House Merchants General Association
27. Hong Kong Catering Industry Association

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28. The Association of Restaurant Managers
29. Hong Kong Department Stores & Commercial Staff General Union
30. Hong Kong Film Development Council
31. Hong Kong Lighting Professionals Association
32. Travel Industry Council of Hong Kong
33. The Hong Kong Tourism Board
34. Tourism Commission
35. The Federation of Hong Kong Hotel Owners
36. Hong Kong Hotels Association
37. The Association for Hong Kong Catering Services Management Ltd
38. Institution of Dining Art

List of organisations invited to the stakeholder engagement session on 5 September 2013

Professional bodies

1. The Hong Kong Institution of Engineers
2. International Commission on Illumination (CIE) (Hong Kong)
3. Hong Kong Association of Energy Engineers
4. The Hong Kong Institute of Architects
5. The Hong Kong Institute of Planners
6. Hong Kong Institute of Surveyors
7. The Hong Kong Institute of Environmental Impact Assessment
8. The Institution of Mechanical Engineers (Hong Kong Branch)
9. Energy Institute (Hong Kong Branch)
10. The Chartered Institution of Building Services Engineers (Hong Kong Branch)
11. Hong Kong Astronomical Society
12. Space Observers HK
13. Hong Kong Medical Association
14. The Public Affairs Forum
15. Harbourfront Commission
16. BEAM Society
17. Hong Kong Green Building Council
18. Professional Green Building Council
19. The Hong Kong General Building Contractors Association
20. Asian Institute of Intelligent Buildings

21. Building Services Operation and Maintenance Executives Society
22. Chartered Institute of Housing (Asian Pacific Branch)
23. The Hong Kong Academy of Medicine
24. The Association of Licentiates of Medical Council of Hong Kong
25. The Hong Kong Doctors' Union
26. The College of Ophthalmologists of Hong Kong

Trade associations

27. The Real Estate Developers Association of Hong Kong
28. The Hong Kong Association of Property Management Companies
29. Hong Kong Institute of Real Estate Administrators
30. The Hong Kong Institute of Housing
31. Hong Kong Facade Association
32. Hong Kong Housing Management Employees Union
33. The Link
34. The Hong Kong Federation of Electrical and Mechanical Contractors Limited
35. The Federation of Hong Kong Electrical and Mechanical Industries Trade Unions
36. Neon Sign and Light Boxes Advertising Employee's Association
37. Hong Kong Electrical Engineering Professional Employees Association
38. Sign Association of Hong Kong
39. Hong Kong Electrical and Mechanical Engineering Employees General Union
40. Hong Kong Professional Sign Maker Association Ltd.
41. H.K. & Kowloon Electrical Engineering & Appliances Trade Workers Union

Annex D

List of Meetings during the Engagement Exercise of Task Force on External Lighting

	Meeting Date	Organisations
1.	28 August 2013 (Wednesday)	Stakeholder Engagement Meeting (Trade Associations, Green Groups and Tourism Industry)
2.	31 August 2013 (Saturday)	Public Forum (General public, District Councils, Area Committees, Rural Committees)
3.	5 September 2013 (Thursday)	Stakeholder Engagement Meeting (Professional Institutions, Property-related Associations and Others)
4.	3 October 2013 (Thursday)	Food & Beverage Industry
5.	10 October 2013 (Thursday)	Environmental and Health Affairs Committee, Tsuen Wan District Council
6.	15 October 2013 (Tuesday)	Development, Planning and Transport Committee, Wan Chai District Council
7.	16 October 2013 (Wednesday)	Small and Medium Enterprises Committee
8.	16 October 2013 (Wednesday)	The Wholesale and Retail Task Force of the Business Facilitation Advisory Committee (BFAC)
9.	17 October 2013 (Thursday)	Cinema Business Liaison Group, BFAC
10.	17 October 2013 (Thursday)	Food, Environment, Hygiene & Works Committee, Central and Western District Council
11.	24 October 2013 (Thursday)	Food Business and Related Services Task Force, BFAC
12.	31 October 2013 (Thursday)	Yau Tsim Mong District Council
13.	7 November 2013 (Thursday)	Food, Environment and Hygiene Committee, Eastern District Council
14.	7 November 2013 (Thursday)	Health and Environment Committee, Sha Tin District Council
15.	8 November 2013 (Friday)	Business Liaison Group (trades of billiard, bowling and ice-skating establishments), BFAC
16.	11 November 2013 (Monday)	Advisory Council on the Environment
17.	15 November 2013 (Friday)	Lighting Manufacturers and Related Industry