# Electrical Safety and Responsibility of REC/REW

電力安全及註冊電業承辦商/工程人員的責任



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## Agenda 議程

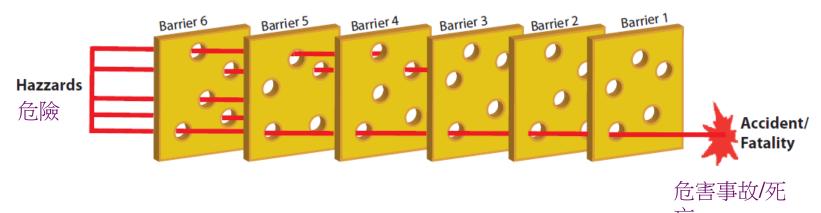


- Electricity Ordinance電力條例 electrical safety電力安全
- Related Documents 文件簽署 表格WR1 及 WR2
- Disciplinary Procedure紀律審裁研訊程序
- Appeal Procedure上訴聆訊程序
- Unsafe Situation 不安全情況
- Responsibilities of REC/REW註冊電業承辦商/工程人員的 責任
- Conclusion 總結

## Accident and Fatality 危害事故及死亡



#### Cheese Model 芝士模型



Electrical Incidents電力事故

# For the past 3 years, average accidents per year is 4

在過去的 3 年裡, 每年的平均危害事故有4個個案





- First introduced in 1911. 於1911年引入
- 1982, together with F&IU (electricity), protect electrical related hazards in work place.於1982 年,與《工廠及工業經營條例》(電力)一起保護工作場所內,與電力相關的危險。.
- 1990, Electricity Ordinance Cap 406., enhancing public safety. 於1990, 加 入 《電力條例》第 406 章,加強保障公共安全
- Introduced electricity (wiring), electricity (registration), electrical products (safety), electricity supply lines (protection) regulations 引入電力(線路)、電力(註冊)、電氣產品(安全)、供電電纜(保護)規例

Purpose of the Ordinance 條例的目的 is to enhance Safety 是為了保障安全



#### Electricity (Wiring) Regulation電力(線路)規例

- Enacted in 1992, stipulating the Safety requirements for the design, installation and testing for fixed electrical installations. 於 1992 年制定,規定了固定電力裝置的設計、安裝和測試的安全要求
- Basically to ensuring the quality and workmanship of fixed electrical installations, ensuring them to be inspected, tested and certified before being energized for use.基本上,是為了保證固定固定電力裝置的質量和工藝,及保證它們在通電使用前經過檢驗、測試和認證



## Electricity (Wiring) Regulation電力(線路)規例

- Code of Practice CoP for the Electricity (Wiring) Regulations comprehensive practical guidelines.電力(線路)規例工作守則- 綜合實用指南
- Matching up the changes in international safety standard and technological advancement.與國際安全標準和技術互相配合

#### **Electricity (Registration) Regulation**

#### 電力(註冊)規例



- For REW, 5 grades of certificates of registration 註冊電業工程人員分為 5個級別
  - ◆ A: low voltage, max demand not exceeding 400A低電壓,最高電力需求量不超過400A
  - ◆ B: low voltage, max demand not exceeding 2500A低電壓,最高電力需求量不超過2500A
  - ◆ C: low voltage, any capacity低電壓,任何電量
  - ◆ H: high voltage高壓
  - \* R: Neon Sign (NS), thermal storage not exceeding 200 litres (WH), Air-Conditioning (AC), electricity supply (CD), generating facility (GF), one particular installation (Others) 霓虹燈 (NS)、儲熱不超過 200 升 (WH)、空調 (AC)、電力供應 (CD)、發電設施 (GF)、一個特定裝置(其他)
- For REC, to employ REW, responsible for the work, supervise and ensure compliance of Ordinance.註冊電業承辦商須僱用註冊電業工程人員,負責工作、監督和確保遵守條例。

## Electricity (Registration) Regulation 電力(註冊)規例



■ For REW, the certification of registration is valid for 3 years. EMSD is responsible for monitoring the performance of REW.註冊 電業工程人員的註冊證明有效期為3年。機電工程署負責監察註冊電業工程人員的表現。

https://www.emsd.gov.hk/en/electricity\_safety/registers/registered\_electrical\_workers/

■ On 1 January 2012, the Continuing Professional Development (CPD) Scheme for REW was put into operation. 2 modules:
Legislative and Safety Requirements, technical knowledge.
(Also, some recognized Academic Courses for REW CPD Training) 由 2012 年 1 月 1 日起,註冊電業工程人員的持續專業進修 (CPD) 計劃開始運作。計劃分 2 個單元:法例和安全規定、技術知識。(此外,亦有一些認可的CPD 培訓課程)

#### **Electricity (Registration) Regulation**

#### 電力(註冊)規例



- REW can now participate and record the diversified learning of Module 3 on a voluntary basis. 註冊電業工程人員現可以自願型式參與及記錄單元三的多元化學習
- For REC, the certification of registration is valid for 3 years. EMSD is responsible for monitoring the performance of registered electrical contractors. 註冊電業承辦商註冊證明的有效期為3年。機電工程署負責監察註冊電業承辦商的表現。

https://www.emsd.gov.hk/en/electricity\_safety/registers/registered\_electrical\_cont ractors/index.html

### Certification Documents 文件簽署



- Inspection, Testing and Certification of electrical installation電氣裝置的檢驗、測試和認證
  - Form WR1, Work Completion Certificate表格WR1,完 工證明書
  - Form WR1A, Work Completion (Part of the installation) Certificate 表格WR1A,完工(部分裝置) 證明書
- Periodic Test Certification定期測試證明書
- Form WR2, Periodic Test Certificate定期測試證明書 Signing the form has the responsibilities to ensure the installation is SAFE.簽署表格 有責任確保裝置安全。

#### **WR1 Form**



## Part 1: Certification of Design 對設計方面的

### 證明

	第1部(對設計方面的證明 ) Part 1 (For Certification of DESIGN)		
(1)	本人	註冊電漿工程人員簽署: Signature of REW: 註冊纖號 Registration No.: 屆滿日期 Expiry Date: 級別 Grade: 准許工程 Permitted Works: 聯絡電話 Contact Tel. No.: 簽署日期 Date Signed:	
(2)	本人,茲代表	註冊電樂承辦商簽署: Signature of REC: 註冊編號 Registration No.: 屆滿日期 Expiry Date: 聯絡電話 Contact Tel. No.: 簽署日期 Date Signed:	

#### **WR1 Form**



#### Part 2: Certification of Installation, Inspection and Testing

#### 第2部〔對安裝、檢查及測試方面的證明〕

	第 2 部 ( 對安裝、檢查及測試方面的證明 ) Part 2 (For Certification of INSTALLATION, INSPECTION & TESTING)		
(3)	本人 為註冊電樂工程人員,現按照《電力條例》(第 406章)第59條下制定的《電力(線路)規例》第19(1)條的規定,證明(請選出 適用的一段文字,並在其空格內加上/號):- I,	註冊電樂工程人員簽署: Signature of REW:	
	本人已於 年 月 日檢查本證明書第 3 部所指的固定 電力裝置,本人認為該固定電力裝置符合條例的規定,而且操作安全。 I have inspected the Fixed Electrical Installation depicted in Part 3 of this certificate on I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.	註冊編號 Registration No.: 屆滿日期 Expiry Date:	
	本人已於  —	級別 Grade: 准許工程 Permitted Works: 聯絡電話 Contact Tel No.: 簽署日期 Date Signed:	
(4)	本人	註冊電漿承辦商簽署: Signature of REC: 註冊編號 Registration No.: 屈滿日期 Expiry Date: 聯絡電話 Contact Tel. No.: 簽署日期 Date Signed:	

#### **WR1 Form**



#### Part 2: Certification of Installation, Inspection and Testing

第2部〔對安裝、檢查及測試方面的認證)

#### **REW:**

本人已於	年	月	_日檢查本證	明書第3部所指的固定	2
電力装置,本	5人認為該固定	電力裝置符	5合條例的規	?定,而且操作安全。	
I have inspe	cted the Fixed	Electrical	Installation	n depicted in Part 3 of	this
certificate o	n	I am sa	tisfied that	the Fixed Electrical	
Installation of	complies with	the Ordin	ance and is	in safe working orde	r.

#### **REC:**

本人	,兹代表	(註卌電業承辦商),
現遵照《電力條例》(第406	章 ) 第 34(11)條的規定	,在本證明書上加簽;並確認此
檢查紀錄已送交裝置擁有人,	而且本人亦根據《電力	(線路 <mark>)</mark> 規例》第 22 條保存此紀
錄的副本。		
l,	, on behalf of_	
(a REC), endorse herewith i	n compliance with secti	on 34(11) of the Electricity
Ordinance, Chapter 406, an	d confirm that the abov	e inspection records have
been given to the owner, ar	nd copies of which are b	eing kept by me in
accordance with regulation	22 of the Electricity (W	iring) Regulations.



#### WR1 Form 電力(線路)規例 完工證明書

#### Part 2: Certification of Installation, Inspection and Testing

第2部〔對安裝、檢查及測試方面的認證)

RÈW: I am satisfied that the Fixed Electrical Installation complies with the Ordinance and is in safe working order.

本人認為該固定電力裝置符合條例的規定,而且操作安全。

REC: I confirm that the above inspection records have been given to the **OWNEr**, and copies of which are being kept by me in accordance with regulation 22 of the Electricity (Wiring) Regulations.

本人確認此檢查紀錄已送交<mark>裝置擁有人</mark>,而且本人亦根據《 電力(線路)規例》第22條保存此紀錄的副本。

#### **WR2 Form**



#### Part 1: Certification of Installation, Inspection and Testing

## Form WR2 (including WR2A) has to be sent to EMSD for endorsement 表格WR2 (包括 WR2A) 須送

#### 交機電工程署加簽

	第1部 PART 1				
致 To	機電工程署署長: the Director of Electrical and Mechanical Services:				
(1)	(請參閱備註 2 & 3 Please see notes 2 & 3)				
	本人,下方簽署人,為按電力條例(第 406 章)第 30 條所註冊的註冊電業工程人員,茲證明				
	本人已於(日/月/年)(請在空格內加/號,只可選一空格)				
	I,, the undersigned, a registered electrical worker (REW) registered under Section 30 of the				
	Electricity Ordinance (Cap. 406), hereby certify that I have on/ (D/M/Y) (Please tick in the appropriate box and only one box is allowed)				
	檢衣及測試背頁第 3 部第 6 項載述的固定電力裝置。   inspected and tested the fixed electrical installation described in item 6 of Part 3 overleaf.				
	檢查及測試背質第 3 部第 6 項載達的固定電力裝置的其中部分,並已收到由其他適需級別的註冊電業工程人員就個別部分所發的有效證明 書 (表格 WR2(A)) - inspected and tested only part of the fixed electrical installation described in item 6 of Part 3 overleaf and have received valid certificates (Form WR2(A)) certified by other REWs of appropriate grades, for other individual parts.				
	本人信納該固定電力裝置符合電力條例第 406 章)及其附屬法例的規定。 I am satisfied that the fixed electrical installation complies with the Electricity Ordinance (Cap. 406) and its subsidiary legislations.				
	簽署				
(2)	(請參閱備註 4 Please see note 4)				
	本人				
	I,, the undersigned, on behalf of				
	, (Please tick in the appropriate box and only one box is allowed)				
	為核電力條例 (第 406 章) 第 33 條所註冊的註冊電業承辦商, a registered electrical contractor (REC) registered under Section 33 of the Electricity Ordinance (Cap. 406),				
	□ 為電力條例(第 406 章)第 35(3) 條所指的固定電力裝置擁有人, the owner of the fixed electrical installation as stipulated in Section 35(3) of the Electricity Ordinance (Cap. 406),				
	現壇照電力條例(第 406 章)第 34(11) 條的規定·在本證明書上加簽。 endorse herewith in compliance with Section 34(11) of the Electricity Ordinance (Cap. 406).				
	簽署				

## Disciplinary procedure 紀律處分程序



- The Director may署長可
  - Reprimand the worker or contractor譴責工程人員或 承辦商
  - Fine a worker up to \$1,000 and a contractor up to \$10,000 對工程人員處以最高 \$1,000元的罰款 , 及對承辦商處以最高 \$10,000元的罰款
  - Refer the matter to the Secretary for Environment and Ecology for hearing by a disciplinary tribunal. 轉交環境及生態局局長安排由紀律審裁小組研訊
- The Director may 署長可
  - Cancel registration取消註冊

### Burden of Proof 舉證責任



- Responsibilities of EMSD機電工程署的職責
- Proof of contravention of ordinance違反條例的證明
- Cautioned statement (the interviewing record) and any admission will be used for further proceedings, e.g. disciplinary tribunal.警誡供詞(面談記錄)和任何招認將用於進一步的訴訟程序,例如紀律審裁小組研訊。
- Consult a lawyer if necessary 有需要時諮詢律師意見

## Disciplinary Tribunal Panel 紀律審裁委員會



- Membership紀律審裁委員會成員
- Appointed by Environment and Ecology Bureau 由環 境及生態局委任
- 21 days after receiving the matter from the Director.
   接獲署長的通知後 21 天。
- One from each of the 5 groups stipulated in the Electricity Ordinance 根據電力法例內訂明的5個組別中各選1人
- Chairmanship elected among themselves主席 各成員間互選
- Service duration is until the end of the case服務期限 至案件結束

## Disciplinary Tribunal Panel紀律審裁委員會



- Membership 3 year Not more than 5 persons from:成員任期為3 年 不超過 5 人來自:
  - ◆ Corporate members of HKIE香港工程師學會的正式會員
  - ◆ Tertiary educational institutions專上學院
  - ◆ Organizations representing the interests of REC代表 註冊電業承辦商權益的團體
  - ◆ Organizations representing the interests of REW 代表 註冊電業工程人員權益的團體
  - ◆ Organizations representing or promoting the interests of owners of commercial, industrial or domestic electrical installations.代表工商業用途或家庭用途的電力裝置擁有人的權益或促進該等權益的團體

#### Discipline 紀律處分



- When REC or REW failed to comply with the Electricity Ordinance, the Director may 當 註册電業承辦商或註册電業工程人員未能遵守電力條例的規定時,署長可
  - ◆ Refer the matter to the Secretary for the
    Environment and Ecology for hearing by a
    disciplinary tribunal 將該事項轉交環境及生態局局長安
    排由紀律審裁小組研訊
  - ◆ Reprimand the worker or contractor, fine REW up to \$1000 and a contractor up to \$10,000譴責該工程人員或承辦商、對工程人員處以最高 \$1,000元的罰款,對承辦商處以最高 \$10,000元的罰款
- The Director can cancel the REC/REW registration署長可取消電業承辦商/註冊電業工程人員的註冊

#### Disciplinary Tribunal 紀律審裁



- At the conclusion of the hearing, the Disciplinary Tribunal can 在研訊結束時,紀律審裁小組訊可
  - Reprimand the REC/REW譴責電業註册承辦商/工程人員
  - Fine REW up to \$10,000/REC up to\$100,000 處以罰款 , 註册 電業工程人員最高 \$10,000/ 註册電業承辦商最高\$ 100,000
  - Suspend or cancel the registration of REW/REC暫停或取消 註冊電業工程人員/承辦商的註冊
  - Suspend REW/REC right to apply for registration or renewal for a specified period of time.暫時中止電業承辦商/工程人員在 指定期限內申請註冊或續牌的權利
- Cost of hearing (the Disciplinary Tribunal costs, legal adviser cost, cost of recording etc.) 研訊費用(紀律審裁小組費用、法律顧問費用、記錄費用等)
- Allow notice of appeal允許上訴通告

### Appeal Board 上訴委員會



## Appeal against the Director's or Disciplinary Tribunal's decision 就署長或紀律審裁小組的決定提出上訴

- Membership成員
- Appointed by Environment and Ecology Bureau環境及生態局委任
- 21 days after receiving the notice from the Director 接獲署長通知 21 天內
- One public officer and one from each of the 7 groups in the Appeal Board Panel—名公職人員及上訴委員會7組別中各一名
- Quorum of an Appeal Board is 6 members上訴聆訊的法定人數為 6 人
- Chairmanship elected from among themselves主席 各成員間互 選
- Service duration is until the end of the case服務期限至案件結束

### Appeal Board Panel上訴委員會



- Membership Not more than 5 persons from成員 不超過 5 人來自:
  - Registered professional engineers(under the electrical discipline) 註冊專業工程師(電機工程界別)
  - Tertiary educational institutions專上學院
  - Electricity supply industry供電業
  - Organizations representing the interests of REC代表註冊電業承 辦商權益的團體
  - Organizations representing the interests of REW代表註冊電業工程人員權益的團體

### Appeal Board Panel上訴委員會



- Membership Not more than 5 persons from成員 不超過 5 人來自:
  - Organizations representing the interests of manufacture, trade in or certify electrical products代表製造、經營或驗證電氣產品人士權益的團體
  - Organizations representing or promoting the interests of owners of commercial, industrial or domestic electrical installations or owners of electrical products. 代表工商業用途或家庭用途的電力裝置擁有人的權益或電氣產品擁有人權益或促進該等權益的團體

#### **Appeal board powers**

#### 上訴小組的權力



- At the conclusion of its hearing, the Appeal Board may在聆訊結束時,上訴小組可
  - confirm or revoke the decision or action of the Director or decision of the disciplinary tribunal確認或推翻署長的決定或行動,或確認或推翻紀律審裁小組的決定
  - make any decision that the Director or disciplinary tribunal could have made. 作出署長或紀律審裁小組原可以作出的決定
  - order the Director to take any action within his powers, including an order to return an electrical product seized 命令署長在其權力範圍內採取行動,包括規定退還檢取的電氣產品的命令

#### **Appeal board powers**

#### 上訴小組的權力



- At the concluding its hearing, Appeal Board can 在聆訊結束時, 上訴小組可
  - in an appeal from a decision of the Director to impose a fine or reprimand, do anything that the disciplinary tribunal may do. 在反對署長判處罰款或加以譴責的決定的上訴中,採取紀律審裁小組可以採取的行動。
  - Cost of hearing (the Appeal Board costs, legal adviser cost, cost of recording etc.)上訴聆訊費用(上訴小組費用、法律顧問費用、錄音費用等)
- The decision of Appeal Board is final.上訴小組的決定為最終決定

### Decision 決定

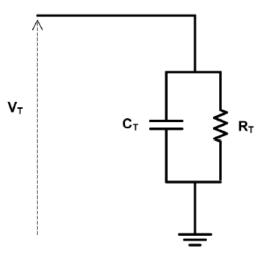


- Appeal Board or Disciplinary Tribunal decide its own procedures上訴小組或紀律審裁小組自行決定其程序
- Decision consists of 2 parts: conviction and sentence決定由兩部分組成:定罪和量刑
- Fee Distribution 費用分担
- Use simple majority使用簡單多數
- Gazette process刊登憲報程序

## Unsafe situation— trapped charge 不安全情况 —殘留電荷



- Body resistance lowered during a bathing condition沐浴時身體抗阻力降低
- Trapped or residual charges殘留電荷
- Phenomena is common in high voltage system高壓系統中常見現象
- Metal parts are not earthed金屬部分沒 有接地
- Stored energy儲存能量 = ½CV²



#### REC Responsibilities註冊承辦商的責任



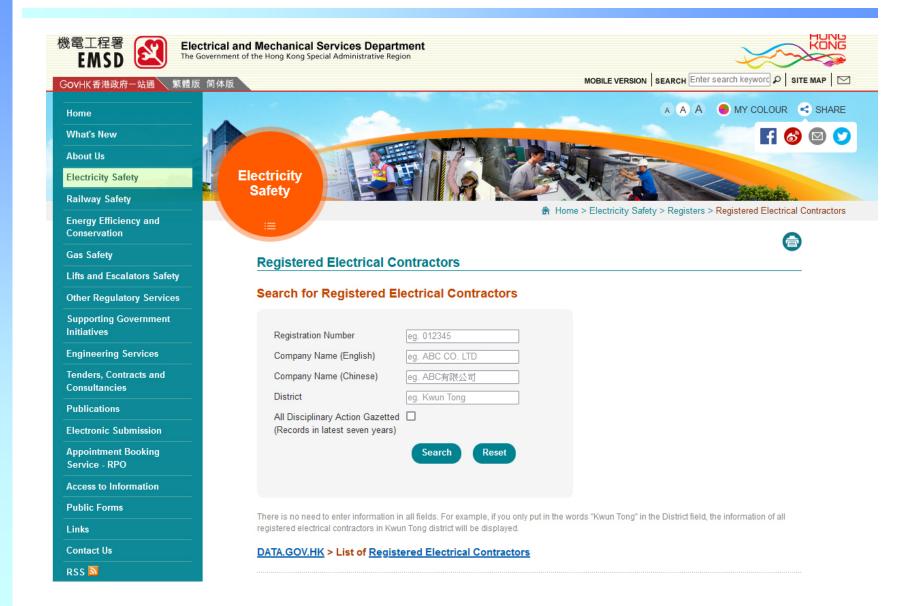
#### **EMSD** website:

https://www.emsd.gov.hk/en/electricity\_safety/publications/guidance\_notes\_guidelines/notes\_for\_registered\_electrical\_contractors/#rec1

- Effectively supervise your registered electrical workers and ensure that they only do the type(s) of electrical work that they are entitled to do under the Electricity Ordinance有效監督您的註冊電業工程人員,確保他們只從事根據《電力條例》有權從事的電力工作
- Shall not cause or allow your employees (i.e. both registered and non-registered electrical workers) to do electrical work in contravention of the Electricity Ordinance.不得導致或允許您的僱員(即註冊和非註冊電業工程人員)從事違反《電力條例》的電力工作。
- Make and keep all relevant records of electrical work carried out by your employees for the lesser of 5 years or the time since your registration as an electrical contractor 製作並保存您員工進行所有相關電氣工作的記錄,或由您註冊為電氣承包商起計5 年的記錄,以較短的時間為準

#### **REC Checking**





## REW Responsibilities註冊電業工程人員的責任

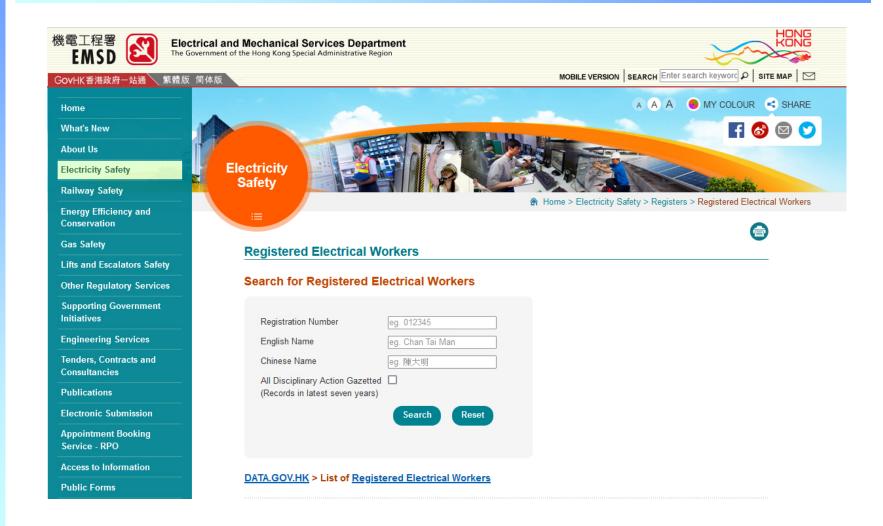
#### **EMSD** website:

https://www.emsd.gov.hk/en/electricity\_safety/publications/guidance\_notes\_guidelines/notes\_for\_registered\_electrical\_workers/index.html#rec1

- shall carry out electrical work in compliance with the requirements of the Electricity Ordinance and in particular, the requirements of the Electricity (Wiring) Regulations須按照《電力條例》的規定,尤其是《電力(線路)規例》的規定進行電力工作
- Shall only do the type(s) of electrical work which is/are entitled by your registration certificate.只能從事您註冊證書內授權的電氣工作類型。
- Make and keep all relevant records of electrical work carried out by your employees for the lesser of 5 years or the time since your registration as an electrical contractor製作並保存您的員工進行的所有相關電氣工作記錄,期限為 5 年或您註冊為電氣承包商後的時間,以較短的時間為準

#### **REW Checking**





## Conclusion 總結



- Electricity Ordinance 電力條例
- Related Documents 文件簽署 表格WR1 and WR2
- Disciplinary Procedure 紀律審裁小組
- Appeal Procedure 上訴聆訊程序
- Unsafe Situation 不安全情況
- Responsibilities of REC/REW 註冊電業承辦商及工程人員的 責任

## Electrical Safety and Responsibility of REC/REW



# Thank you for attending this seminar 感謝您參加本次研討會