Green Public Procurement for Energy and Water Efficiency

Roll-out workshop

January 2017
We would like to recognize all the entities contributing to the success of the GPPEWE and to the preparation of the guidelines and roll-out workshop.

Supervision:

Program management:

Development of first common criteria:

Review, articulation and implementation (GPC Members¹):

¹. In addition to the entities listed above
# Green Public Procurement Roll-Out Workshop

**Agenda**

<table>
<thead>
<tr>
<th>Time</th>
<th>Agenda Item</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.00</td>
<td>Reception and networking coffee</td>
<td>30 min</td>
</tr>
<tr>
<td>8.30</td>
<td>Keynote speech</td>
<td>10 min</td>
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<tr>
<td></td>
<td>SG, DSCE</td>
<td></td>
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<tr>
<td>8.45</td>
<td>Introduction to the DSM Strategy Implementation</td>
<td>10 min</td>
</tr>
<tr>
<td></td>
<td>TAQATI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The DSCE Guidelines on Green Public Procurement</td>
<td>15 min</td>
</tr>
<tr>
<td></td>
<td>TAQATI</td>
<td></td>
</tr>
<tr>
<td>9.45</td>
<td>General Criteria for GPP</td>
<td>20 min</td>
</tr>
<tr>
<td></td>
<td>EGA/ TAQATI</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dubai Lamp initiative</td>
<td>15 min</td>
</tr>
<tr>
<td></td>
<td>DM</td>
<td></td>
</tr>
<tr>
<td>9.45</td>
<td>Coffee break</td>
<td>10 min</td>
</tr>
<tr>
<td>10.00</td>
<td>GPP Criteria for Indoor Lighting</td>
<td>20 min</td>
</tr>
<tr>
<td></td>
<td>EGA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Break-out sessions: application exercise</td>
<td>60 min</td>
</tr>
<tr>
<td></td>
<td>DEWA/ EGA/ TAQATI</td>
<td></td>
</tr>
<tr>
<td>10.25</td>
<td>Wrap-up and team presentations</td>
<td>15 min</td>
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<tr>
<td></td>
<td>All</td>
<td></td>
</tr>
<tr>
<td>11.00</td>
<td>Plan for testing the Criteria (application, monitoring and reporting)</td>
<td>10 min</td>
</tr>
<tr>
<td></td>
<td>DEWA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Q&amp;A</td>
<td>10 min</td>
</tr>
<tr>
<td></td>
<td>Training panel</td>
<td></td>
</tr>
<tr>
<td>12.00</td>
<td>Closing note</td>
<td>5 min</td>
</tr>
<tr>
<td></td>
<td>DSCE</td>
<td></td>
</tr>
</tbody>
</table>
1  Keynote speech
2 Introduction to the DSM Strategy
DSCE developed the DIES 2030 to support and drive forward the Vision of Dubai with the DSM Strategy a crucial component.

Dubai Vision: become a role model to the world in energy security and efficiency

DIES 2030

- Security of Energy Supply
- Reduction of Demand
- Innovation and Enablers
- Sustainable Growth

- Gas Supply / LNG
- Clean Coal
- Natural Gas
- Utility Scale Solar
- Import / Nuclear
- Demand Side Management Strategy (DSM Strategy)

- R&D / New Technologies
- Policy & Regulatory Framework
- Funding & Financing
- PPP (IPP model)

- Waste Management
- Green Mobility
- Investment in Clean and Smart Technologies
Dubai has set ambitious targets for its DSM Strategy of 30% savings of electricity and water by 2030.
The DSM strategy comprises 9 main programs very diverse in nature managed by various entities and supported by 8 implementation mechanisms.

Dubai to become a role model in energy efficiency by implementing cost-effective electricity and water demand saving measures and developing a green service market.

1. Building regulation
2. Building retrofits
3. District cooling
4. Standards & labels for appliances & equipment
5. Irrigation and YSE
6. Outdoor lighting
7. Power and water tariff rates
8. Demand response
9. Shams Dubai

Institutional setting and capability building
Policies and regulations
Information systems
Public awareness

Governing by example
Technologies and studies
Financing mechanisms
Measurement and verification
A clear cascade of roles and responsibilities with active collaboration has been decided to ensure efficient implementation of the DSM Strategy.

DSM Strategy implementation pyramid

- **Program Owners - DSM Implementation**
  - Lead and execute the DSM Strategy programs

- **TAQATI - DSM Management**
  - Manage the DSM Strategy implementation, enablement and continuous improvement
  - Set targets, & assess implementation

- **DSCE - DSM Vision**
  - Set DSM Strategy Vision
  - Develop the DSM Strategy, governance, policies & regulations

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Set DSM Strategy Vision

Develop the DSM Strategy, governance, policies & regulations

Set targets, & assess implementation

Manage the DSM Strategy implementation, enablement and continuous improvement

Lead and execute the DSM Strategy programs
To date, all DSM programs are meeting initial savings targets in preparation for a strong ramp-up in the coming years in Electricity.

### Electricity Savings

* (TWh, 2011 to ’15 actual, 2016 to ’30 target)

<table>
<thead>
<tr>
<th>Year</th>
<th>Savings vs. BAU</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>4.6%</td>
</tr>
<tr>
<td>2012</td>
<td>5.0%</td>
</tr>
<tr>
<td>2013</td>
<td>4.9%</td>
</tr>
<tr>
<td>2014</td>
<td>5.1%</td>
</tr>
<tr>
<td>2015</td>
<td>5.4%</td>
</tr>
</tbody>
</table>

Savings from DEWA Tariff Reforms:
- 2011: 1.5 TWh
- 2012: 1.6 TWh
- 2013: 1.3 TWh
- 2014: 1.2 TWh
- 2015: 1.6 TWh

Initial savings from DGBR, ESMA Regs and Retrofit:
- 2016: 2.1 TWh
- 2017: 2.2 TWh
- 2018: 2.9 TWh
- 2019: 3.7 TWh
- 2020: 4.5 TWh
- 2025: 12.0 TWh
- 2030: 19.0 TWh

50% savings from other programs:
- 2011: 0.75 TWh
- 2012: 0.75 TWh
- 2013: 0.65 TWh
- 2014: 0.60 TWh
- 2015: 0.80 TWh
- 2016: 1.10 TWh
- 2017: 1.45 TWh
- 2018: 2.35 TWh
- 2019: 3.67 TWh
- 2020: 5.40 TWh
- 2025: 12.00 TWh
- 2030: 19.00 TWh

Source: DSM Program Owners, TAQATI analysis
To date, all DSM programs are meeting initial savings targets in preparation for a strong ramp-up in the coming years in Water.

**Water Savings**
*(BIG, 2011 to ’15 actual, 2016 to ’30 target)*

- **Savings from DEWA Tariff Reforms**
- **Initial savings from Water Reuse**
- **50% savings from other programs**

<table>
<thead>
<tr>
<th>Year</th>
<th>Targets</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>3.5</td>
<td>3.3</td>
</tr>
<tr>
<td>2012</td>
<td>3.6</td>
<td>3.5</td>
</tr>
<tr>
<td>2013</td>
<td>2.8</td>
<td>3.3</td>
</tr>
<tr>
<td>2014</td>
<td>2.4</td>
<td>3.3</td>
</tr>
<tr>
<td>2015</td>
<td>2.2</td>
<td>3.4</td>
</tr>
<tr>
<td>2016</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>6.9</td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>9.1</td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>13.1</td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td>29.0</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>47.0</td>
<td></td>
</tr>
</tbody>
</table>

**Savings vs. BAU**
- 2011: 4.0%
- 2012: 4.0%
- 2013: 3.6%
- 2014: 3.4%
- 2015: 3.3%

Source: DSM Program Owners, TAQATI analysis
3 The DSCE Guidelines on GPP in the Dubai Emirate
What is Green Procurement, GPP and GPPEWE?

**Green Procurement**

Business practice entailing purchase of goods and services, at competitive prices, that cause minimal adverse environmental impacts throughout the lifecycle of affected assets.

**GPP: Green Public Procurement**

The application of green procurement by government entities, in line with public procurement laws.

**GPPEWE: Green Public Procurement for Energy & Water Efficiency**

Specific focus of GPP, whereby government entities, when making purchasing decisions, take into account the primary objective of minimizing transportation fuel, electricity and water consumption resulting from the purchase.
Why should the Dubai government consider GPPEWE?

- **Green Procurement**, with focus on energy efficiency (GPPEWE), is an important supporting tool for the DSM strategy, and as such it is part of the DSM roadmap.
- It induces procurement functions in considering more systematically **energy and water consumption implications** of their purchase decisions.
- **International best practices** show that GPPEWE can deliver **energy conservation objectives** and at the same time **economic savings**, at least on a life cycle basis.
- The **Dubai Government has already started** embracing the concepts of Green Public Procurement (GPP), with some entities showing relevant initiatives.
- However, there are still today **significant differences across entities**, primarily related to:
  - Level of **penetration** of green procurement within the total spend
  - Level of **integration** in the procurement processes and targets
  - Degrees of focus on **energy efficiency vs. broader environmental objectives**
The DSCE Guidelines on GPPEWE fit in a larger regulatory framework supporting the DSM Strategy.

- **Buildings**
  - 1. DGBR
  - 3. GPPEWE Guidelines

- **Equipment**
  - 2. ESMA standards
  - 5. Energy management (in progress)
The Guidelines aim to encourage government entities in considering more systematically the energy efficiency implications of their purchasing decisions.

- **Objectives and targets**
  - Stimulate adoption of GPPEWE practices in government entities...
  - ...and enhance current organizational capabilities in the field

- **Expected impact**
  - Consumption savings on electricity, transportation fuel and water, and lower CO2 emissions...
  - ... at same or lower cost for the entities on a life cycle basis

- **Scope**
  - Newly procured products and services, with no restrictions to specific product categories
  - Introduction of a platform for synergies and cross learning across entities (e.g., GP Committee, reporting, common criteria...)

- **Target recipients**
  - Initial pilot phase restricted to member entities of the Supreme Council of Energy
  - After the pilot phase, potential extension to 50+ government entities

- **DSCE GUIDELINES For GPPEWE**
Some benchmarks: GPPEWE is extensively applied, addressing conservation targets in addition to economic savings targets

**EU**
- EU Directives SEC(2008) 2124-6 and 2006/32/EC
- 23 guidebooks for relevant product/service categories

**Canada**
- Policy on Green Procurement for the federal government (2006)

**USA**

**Hong Kong**
- Policy on Green Procurement for government entities (2000)

**Japan**
- Green Purchasing Law for government entities (2001)
- Specifications for 18+ products categories

**Taiwan**

**Australia and New Zealand**
The Guidelines are in line with the definitions of the international GHG Protocol, as they reduce direct consumption and emissions from energy purchases.

The Guidelines recommend action items along the existing procurement process of each entity, to ensure water and electricity consumption is considered.

Requirements of the DSCE Guidelines along the existing procurement processes of government entities

**Annual planning**

**Purchasing standards/priorities**

**Tendering and award**

**Monitoring and reporting**

**1. Governance**

- Nomination of Green Procurement Officers (GPOs) within each entity (promoting and monitoring adoption)
- Set-up of a Green Procurement Committee, where GPOs share best practices and launch common projects
- Selection of a Champion Organization to drive the activities of the Committee (on a rotation basis)

**2. GPPEWE Scope**

- Each entity to assess potential and define priorities for GPPEWE application

**3. GPPEWE Targets**

- Each entity to define numerical targets for GPPEWE penetration

**4. GPPEWE Criteria**

- Development of common criteria to be included in tender documents
- Some criteria (for highly common product categories) to be developed jointly in the form of Guidebooks (work driven by Category Leader Organizations)

**5. Tendering**

- Each organization to incorporate criteria in tendering documents, in line with the scope and targets they have defined for GPPEWE

**6. Monitoring**

- Each entity to report yearly to DSCE on progress through the Champion Organization
- Annual report to be issued by DSCE (through the Champion Organization)
A Green Procurement Committee (GPC) coordinates common efforts, while a Champion Organization supports DSCE in execution.

- **Green Procurement Committee (GPC)**
  - Green Procurement Organizations
    - Sharing of best practices
    - Development of common projects
  - Green Procurement Organizations
    - Execution of GPPEWE and projects (e.g., Guidebooks)
    - Reporting to GPC
  - GPC Chairman
    - Member position in the GPC
  - DSCE
    - Custodian of the GPP Guidelines
    - Endorsement of decisions of the GPC
    - Promotion of common projects
    - Annual evaluation

- **Green Champion Organization**
  - Guidance and support to the works of the GPC
  - Follow-up with GPOs for common projects
  - Reporting on progress to DSCE

- **Green Procurement Officers (GPOs)**
  - Category Leader Organizations (responsible for development of Guidebooks) on specific product/service categories
We are progressing along a well defined roadmap, and some important milestones have been met, including issuance of the first common criteria.
The initiative promotes penetration of energy conscious procurement, with high degrees of flexibility in execution

- The initiative is in line with the DSM strategy, where the government should lead by example in energy and water efficiency, and where Green Procurement is part of the agreed roadmap

- It is in line with best practices and with the definitions of the existing international GHG Protocol, facilitating monitoring of emissions

- It does not bring any changes in current legislation or regulatory framework

- It brings cost savings for the government on a life cycle cost basis, and does not require capital investments

- It allows high degrees of flexibility in execution, since each entity will define its own targets, extension of application and timing
4 General Criteria for GPP
1. Overcome perception that green products/services are more expensive than conventional ones with analyses supporting adoption of certain standards

2. Complement knowledge of public officials on how to integrate environmental standards in the procurement process

3. Introduce a common basis of definitions and techniques to support monitoring and evaluation of GPP implementation

4. Support asset innovation and evolution of the supplier offering
An important milestone is the issuance of common Green Procurement Criteria

General Criteria (Green Procurement Guidebook)

- Provide the **methodology** and **framework** to develop and incorporate green requirements in tenders (preparation, evaluation)

Category-Specific Criteria (annexes)

- Provide criteria (**parameters, thresholds**) for the specific product category

Pilot regulation ready
GPP methodology: The Life Cycle Cost is the most comprehensive method, but it can be efficiently applied only in exceptional cases and needs to be simplified.
GPP methodology: As an alternative to the Life Cycle Cost, a more general approach for every product category can be followed

<table>
<thead>
<tr>
<th>Core Criteria</th>
<th>Enhanced Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Used by Government entities with minimal verification effort</td>
<td>• Used by a Government entity to procure products with the best environmental impact</td>
</tr>
<tr>
<td>• Expected to have a clearly positive impact on Life Cycle cost with relatively short payback times</td>
<td>• May require additional verification effort, since impact on purchasing price may be more significant</td>
</tr>
</tbody>
</table>

**Basic Requirements**

- Minimum requirements included in the definition of the scope of products/services to be provided by all tenderers

**Desirable Features (Green Benefit)**

- Evaluation item / dimension providing additional points to products exceeding the minimum requirements

1. Develop criteria starting from the main environmental impacts
2. Use energy labels as part of the criteria (when available)
3. Use a weighted evaluation method, rewarding products that exceed the minimum requirements

Criteria may include not only purchase guidelines, but also recommendations on project design and installation. A verification method applicable by any buyer should be expressed for each criteria.
1. Develop criteria starting from the main environmental impacts of the product category

**Main environmental impact for indoor lighting**

<table>
<thead>
<tr>
<th>Areas of Environmental Impact</th>
<th>Approach</th>
</tr>
</thead>
</table>
| Energy consumption and CO₂ emissions during use | • Use LED as the technology of choice, wherever applicable  
• Adopt products with high energy efficiency rating  
• In the project design stage, include lighting controls and dimming criteria where applicable, and reduce power density to the minimum needed to fulfil the required visual activities |
| Use of hazardous material, and generation of waste in the disposal phase | • Limit mercury content below pre-defined levels  
• Prefer products with longer lifetime |
| Heat generation | • Adopt products with high energy efficiency rating |
2. Use energy labels as part of the criteria (when available)

**Example 1: Electric motors**

<table>
<thead>
<tr>
<th>Product</th>
<th>IE1</th>
<th>IE2</th>
<th>IE3</th>
<th>IE4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency (%)</td>
<td>93.3</td>
<td>94.5</td>
<td>95.4</td>
<td>96.3</td>
</tr>
<tr>
<td>Payback time (months)</td>
<td>N/A</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Legend:**
- Price (million AED)
- Cost of energy consumption over 15 years (million AED)

**Example 2: Indoor lighting**

<table>
<thead>
<tr>
<th>Product</th>
<th>Florescent Tube</th>
<th>CFL</th>
<th>LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy efficiency rating by ESMA</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Payback time (months)</td>
<td>N/A</td>
<td>8</td>
<td>16</td>
</tr>
</tbody>
</table>

**Legend:**
- Cost of energy consumption over 5 years (AED)
- Replacement - maintenance cost (AED)
- Initial purchasing price (AED)
3. Use a weighted evaluation method, assigning additional points to suppliers exceeding minimum GPP requirements

Matrix of a Weighted Evaluation Method

<table>
<thead>
<tr>
<th>Commercial evaluation</th>
<th>Price</th>
<th>60%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical evaluation</td>
<td>Compliance to technical specifications</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Delivery service</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>Technical experience</td>
<td>5%</td>
</tr>
<tr>
<td><strong>Green Benefit</strong></td>
<td></td>
<td><strong>10%</strong></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

ILLUSTRATIVE EXAMPLE

- The Green Benefit may be higher for Enhanced Criteria than for Core Criteria
- The Green Benefit may be low initially (e.g., 5-10%) and increased over time as appropriate

1) Point 2, paragraph 2.2 of the General Criteria; 2) Point 4, paragraph 2.2 of the General Criteria
Indoor Lighting Criteria are ready, and there is a plan to develop specific criteria for many other product categories.

<table>
<thead>
<tr>
<th>Responsible Entity Status</th>
<th>Milestone 1: Draft for GPC consultation</th>
<th>Milestone 2: Pilot regulation ready</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indoor Lighting</strong></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Electric Motors</strong></td>
<td>Feb 2017</td>
<td>Mar 2017</td>
</tr>
<tr>
<td><strong>IT Equipment</strong></td>
<td>✓</td>
<td>Mar 2017</td>
</tr>
<tr>
<td><strong>AC Equipment</strong></td>
<td>Feb 2017</td>
<td>Mar 2017</td>
</tr>
<tr>
<td><strong>Vehicles</strong></td>
<td>Feb 2017</td>
<td>Mar 2017</td>
</tr>
<tr>
<td><strong>Irrigation Equipment</strong></td>
<td>Feb 2017</td>
<td>Apr 2017</td>
</tr>
<tr>
<td><strong>Indoor Water Fixtures</strong></td>
<td>Feb 2017</td>
<td>Apr 2017</td>
</tr>
<tr>
<td><strong>Solar Panels</strong></td>
<td>Feb 2017</td>
<td>Apr 2017</td>
</tr>
</tbody>
</table>
5   Dubai Lamp initiative
6 GPP Criteria for Indoor Lighting
Scope of GPP Criteria for Indoor Lighting

In scope:
- Lamps with any related luminaires and lighting controls for use inside of buildings:
  - LED
  - Metal Halide
  - CFL/Fluorescent tubes
  - High pressure sodium

Out of scope:
- External lighting of any type
- Coloured lighting
- Lighting for specialized plant, machinery and equipment
- Display lighting for museums, monuments and art galleries
- Lighting for plant growth
- Lighting for sports
- Lighting for visually impaired persons with special lighting needs
- Specialized medical lighting to carry out examination or surgery
  - e.g. in hospitals, medical centres, or doctors’ and dentists’ surgeries
- Stage lighting in theatres and TV studios
Criteria for indoor lighting define the basic requirements, core and enhanced, as well as desirable features to guide the assignment of green benefits.

Content of the GPP Criteria for Indoor Lighting

<table>
<thead>
<tr>
<th>Basic Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core</td>
</tr>
</tbody>
</table>

1. **Purchase Criteria**
   - 3.2.A. Minimum energy efficiency by type of technology
     - ✓
     - ✓
   - 3.2.B Maximum mercury content by type of technology
     - ✓
     - ✓
   - 3.2.C Minimum lifespan by type of technology (operational hours)
     - ✓
     - ✓

2. **Design Criteria**
   - 4. Maximum lighting density
     - 4.1 Whole building
       - ✓
       - ✓
     - 4.2 Individual spaces and specific usages
       - ✓
       - ✓
   - 4.3 Lighting Controls
     - ✓

2. Green Benefit: For some parameters, additional points are awarded for exceeding minimum requirements (core or enhanced)

1. Threshold values are specified for each parameter as a minimum requirement.
Purchase Criteria - Basic Requirements

A. LED technology to be applied when technically possible

B. Ban for:
   • 1. Mercury Vapour (as already required by ESMA regulation)
   • 2. Incandescent lights of any type, including halogen lamps
## Purchase Criteria - Basic Requirements

### A Maximum mercury content

<table>
<thead>
<tr>
<th>TYPE OF LAMP</th>
<th>Mercury content (mg/lamp)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Criteria</td>
</tr>
<tr>
<td><strong>METAL HALIDE</strong></td>
<td>Equal to or lower than 10 mg</td>
</tr>
<tr>
<td><strong>HIGH PRESSURE SODIUM</strong></td>
<td>Equal to or lower than 10 mg</td>
</tr>
<tr>
<td><strong>CFL/FLUORESCENT TUBES</strong></td>
<td>Equal to or lower than 3 mg</td>
</tr>
<tr>
<td><strong>LED</strong></td>
<td>Without mercury content</td>
</tr>
</tbody>
</table>

**Verification**: Certification to be provided by suppliers (different forms are applicable e.g., certification attached to the bid itself or inclusion of a copy of the product packaging or indication of a link to manufacturer’s website where the mercury content information is specified)
## Purchase Criteria - Basic Requirements

### Minimum energy efficiency rating (ESMA)

<table>
<thead>
<tr>
<th>TYPE OF LAMP</th>
<th>ESMA Energy Efficiency Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Criteria</td>
</tr>
<tr>
<td>METAL HALIDE</td>
<td>Equal to or greater than 3 star</td>
</tr>
<tr>
<td>HIGH PRESSURE SODIUM</td>
<td>Equal to or greater than 3 star</td>
</tr>
<tr>
<td>CFL/FLUORESCENT TUBES</td>
<td>Equal to or greater than 3 star</td>
</tr>
<tr>
<td>LED</td>
<td>Equal to or greater than 4 star</td>
</tr>
</tbody>
</table>

**Verification:** Lamp label of the specified energy efficiency rating or higher, compliant to ESMA standards
Purchase Criteria - Basic Requirements

Minimum lifespan

<table>
<thead>
<tr>
<th>TYPE OF LAMP</th>
<th>Lifespan (operating hours)</th>
<th>Core Criteria</th>
<th>Enhanced Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>METAL HALIDE</td>
<td>Equal to or greater than 8,000 h</td>
<td>Equal to or greater than 16,000 h</td>
<td></td>
</tr>
<tr>
<td>HIGH PRESSURE SODIUM</td>
<td>Equal to or greater than 8,000 h</td>
<td>Equal to or greater than 16,000 h</td>
<td></td>
</tr>
<tr>
<td>CFL/FLUORESCENT TUBES</td>
<td>Equal to or greater than 6,000 h</td>
<td>Equal to or greater than 10,000 h</td>
<td></td>
</tr>
<tr>
<td>LED</td>
<td>Equal to or greater than 35,000 h</td>
<td>Equal to or greater than 50,000 h</td>
<td></td>
</tr>
</tbody>
</table>

Verification: Suppliers to provide results of lamp life testing performed in line with the test procedure in EN 50285 or equivalent UAE or International standard
Purchase Criteria - Desirable Features
For the award of additional points (Green Benefit)

Points will be awarded according to the methodology defined in the General Criteria, in line with the following table:

<table>
<thead>
<tr>
<th>ENVIRONMENTAL IMPACT</th>
<th>CORE CRITERIA</th>
<th>ENHANCED CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mercury content (mg/lamp)</strong></td>
<td>Lower than 3 mg (CFL/Fluorescent tubes)</td>
<td>Lower than 1.5 mg (CFL/Fluorescent tubes)</td>
</tr>
<tr>
<td></td>
<td>Lower than 10 mg (metal halide/high pressure sodium)</td>
<td>Lower than 5 mg (metal halide/high pressure sodium)</td>
</tr>
<tr>
<td></td>
<td>No mercury content (LED)</td>
<td>No mercury content (LED)</td>
</tr>
<tr>
<td><strong>ESMA Energy Efficiency Rating</strong></td>
<td>Equal to 5 stars (LED)</td>
<td>No incremental points (LED)</td>
</tr>
<tr>
<td></td>
<td>Equal or Greater than 4 stars (any other technology)</td>
<td>Equal to 5 stars (any other technology)</td>
</tr>
</tbody>
</table>
### Purchase Criteria - Estimation of energy savings

<table>
<thead>
<tr>
<th>1. Adoption of Criteria for LED</th>
<th>Core Criteria: 55%</th>
<th>Enhanced Criteria: 70%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Adoption of Criteria for non-LED technologies</td>
<td>Core Criteria: 35%</td>
<td>Enhanced Criteria: 55%</td>
</tr>
</tbody>
</table>

Estimation of savings refers to year 2015, when it is assumed that government entities have on average purchased indoor lamps with efficiency between ESMA 2 star and ESMA 3 star rating.
Design Criteria - Lighting density for whole buildings

New Buildings or Renovated Buildings
(Max Lighting Power Installed per GFA, W/m²)

<table>
<thead>
<tr>
<th>BUILDING TYPE</th>
<th>CORE CRITERIA</th>
<th>ENHANCED CRITERIA</th>
<th>ASHRAE 2015(1)</th>
<th>DM DGBR</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFFICE BUILDING</td>
<td>-38%</td>
<td>6.7</td>
<td>-65%</td>
<td>3.8</td>
</tr>
<tr>
<td>EDUCATIONAL FACILITY</td>
<td>-45%</td>
<td>7.1</td>
<td>-62%</td>
<td>4.0</td>
</tr>
<tr>
<td>MANUFACTURING FACILITY</td>
<td>-34%</td>
<td>9.2</td>
<td>-63%</td>
<td>5.2</td>
</tr>
<tr>
<td>RETAIL (OUTLET/MALL)</td>
<td>-23%</td>
<td>12.4</td>
<td>-56%</td>
<td>7.1</td>
</tr>
<tr>
<td>WORKSHOP</td>
<td>-33%</td>
<td>10.1</td>
<td>-62%</td>
<td>5.7</td>
</tr>
<tr>
<td>WAREHOUSE</td>
<td>-28%</td>
<td>6.2</td>
<td>-59%</td>
<td>3.5</td>
</tr>
<tr>
<td>LABOR ACCOMMODATION</td>
<td>-26%</td>
<td>5.6</td>
<td>-57%</td>
<td>3.2</td>
</tr>
</tbody>
</table>

**Verification:** A calculation provided by the lighting designer showing the total power consumed by the lighting, including lamps, ballasts, sensors and controls, divided by the gross floor area of all the indoor spaces of the building.

1) Addenda supplement to ANSI/ASHRAE/IES Standard 90.1.2013
Design Criteria - Lighting density for individual spaces and specific usages

### Individual Indoor Spaces and Usage

*(Max Lighting Power Installed per net floor area, W/m²)*

<table>
<thead>
<tr>
<th>SPACE TYPE (USAGE)</th>
<th>CORE CRITERIA</th>
<th>ENHANCED CRITERIA</th>
<th>ASHRAE 2015 <em>(1)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDIENCE SEATING AREA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- AUDITORIUM</td>
<td>-39% 5.9</td>
<td>-65% 3.3</td>
<td>9.7</td>
</tr>
<tr>
<td>- CONVENTION CENTER</td>
<td>-48% 3.9</td>
<td>-70% 2.2</td>
<td>7.5</td>
</tr>
<tr>
<td>- GYMNASIUM</td>
<td>-9% 3.9</td>
<td>-48% 2.2</td>
<td>4.3</td>
</tr>
<tr>
<td>CONFERENCE/MEETING ROOM</td>
<td>-58% 5.9</td>
<td>-76% 3.3</td>
<td>14.0</td>
</tr>
<tr>
<td>CORRIDORS</td>
<td>-27% 3.9</td>
<td>-58% 2.2</td>
<td>5.4</td>
</tr>
<tr>
<td>LOBBY (GENERAL CASE)</td>
<td>-72% 3.9</td>
<td>-84% 2.2</td>
<td>14.0</td>
</tr>
<tr>
<td>OFFICE</td>
<td>-17% 9.8</td>
<td>-53% 5.6</td>
<td>11.8</td>
</tr>
<tr>
<td>PARKING AREA / INTERIOR</td>
<td>-9% 2.0</td>
<td>-48% 1.1</td>
<td>2.2</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Verification:** A calculation provided by the lighting designer showing the total power consumed by the lighting, including lamps, ballasts, sensors and controls, divided by the gross floor area of all the indoor spaces of the building.

1) Addenda supplement to ANSI/ASHRAE/IES Standard 90.1.2013
Design Criteria - Lighting controls

New Buildings or Renovated Buildings and Individual Spaces

*(Lighting Controls - In line line with DGBR code 502.06, but applicable to existing buildings as well)*

- Occupant Lighting Controls must be provided so as to allow lighting to be switched off when daylight levels are adequate or when spaces are unoccupied and to allow occupants control over lighting levels
- Common areas which are not regularly occupied, such as corridors and lobbies, should reduce lighting levels to no more than twenty five percent (25%) of normal when unoccupied
- In offices and education facilities all lighting zones must be fitted with occupant sensor controls capable of switching the electrical lights on and off based on occupancy, unless lighting is required for safety purposes. The requirement applies to spaces for which the average design lighting power density is over 4 Watts per square meter
- Lighting controls should be designed in order to maximize contribution of natural daylight when possible

**Verification:** A technical document provided by the lighting designer, listing the lighting controls to be installed in each space, and providing information on adopted measures to leverage contribution from natural daylight
The Criteria provide orientation elements applicable to a broad set of purchasing events

<table>
<thead>
<tr>
<th>Purchasing event</th>
<th>Design Criteria</th>
<th>Purchase Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spot purchase or call-off contract</td>
<td>NA</td>
<td>• Tender to incorporate basic requirements&lt;br&gt;• Evaluation to be conducted with the recommended weighted method</td>
</tr>
<tr>
<td>Turnkey contract - new development</td>
<td>• Consultant to apply design criteria (core or enhanced)</td>
<td>• Contractor / ESCO to apply basic requirements (core or enhanced) as a minimum&lt;br&gt;• Evaluation may include a weighted method, in line with the recommended one</td>
</tr>
<tr>
<td>Turnkey contract - retrofit</td>
<td>NA</td>
<td>• Service provider to apply basic requirements (core or enhanced) as a minimum</td>
</tr>
<tr>
<td>Maintenance contract</td>
<td>NA</td>
<td>• Tender to incorporate basic requirements (core or enhanced) for products whose criteria have been defined&lt;br&gt;• Technical evaluation to be conducted with the recommended weighted method for each product type separately, and then aggregated</td>
</tr>
<tr>
<td>Bundled purchase - lighting + other</td>
<td>NA</td>
<td>...</td>
</tr>
<tr>
<td>Bundled purchase - different lighting types</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

GPP Criteria are expected to provide orientation on requirements and methods. The buyer is expected to leverage his/her expertise to adapt usage of the criteria to the specific purchasing situation
Application steps: Purchase criteria

1. Need for Product
2. Start
3. Product category specific purchase criteria exist?
   - Yes
     - Select core or enhanced criteria
     - Include core criteria as basic requirements in RFP
     - Core
     - Include enhanced criteria as basic requirements in RFP
     - Enhanced
     - Decide on weight of Green Benefit
   - No
     - Prepare tender according to current practices

   1. Corporate policies
   2. Project specific objectives

4. Evaluate Bids based on criteria and weight
5. LCC Components
6. Weighted method preferred vs. LCC?
   - No
     - LCC Components
     - If considered beneficial
   - Yes
     - LCC

Legend:
- Process flow
- Inputs / outputs

GPP criteria for product:
1. Basic Requirements
   - Corporate policies
   - Project specific objectives

2. Desirable Features
   - Evaluations weights

End
Application steps: Purchase criteria - Example Indoor Lighting (1/2)

1. Standard Purchase Requisition for 500 CFL lamps as a replacement of existing lamps, with specific requirements:
   - Luminous flux $\geq 1000$ lm (1500 ideal)
   - Wattage $\leq 20$ W

2. GPP Criteria for Indoor Lighting exist (Annex 1 of GPP General Criteria)

3. Core Criteria selected based on corporate decision

4. Core criteria extracted from GPP, and added to the other requirements included in the RFP:
   - ESMA Energy Efficiency rating $\geq 3$ stars
   - Mercury Content $\leq 3$ mg / lamp
   - Lifespan $\geq 6,000$ h

5. Bids evaluated using Weighted Method with Green Benefits weights (although LCC method is the most comprehensive, it is too complex for a purchase of limited magnitude)

6. Green Benefit weights (% of max evaluation points)

<table>
<thead>
<tr>
<th>Evaluation Method</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial evaluation</td>
<td>60%</td>
</tr>
<tr>
<td>Technical evaluation</td>
<td>30%</td>
</tr>
</tbody>
</table>

Green Benefit: 10%

TOTAL: 100%
### Application steps: Purchase criteria - Example Indoor Lighting (2/2)

#### 7. Bid evaluation:

- **Bids (extract):**

<table>
<thead>
<tr>
<th>Bidders</th>
<th>Supplier 1</th>
<th>Supplier 2</th>
<th>Supplier 3</th>
<th>Supplier 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposals</td>
<td>CFL</td>
<td>CFL</td>
<td>CFL</td>
<td>Halogen</td>
</tr>
<tr>
<td>Technical Proposal</td>
<td>• 1050 lm</td>
<td>• 1250 lm</td>
<td>• 1500 lm</td>
<td>• 1200 lumen</td>
</tr>
<tr>
<td></td>
<td>• 3 stars</td>
<td>• 3 stars</td>
<td>• 4 stars</td>
<td>• 2 stars</td>
</tr>
<tr>
<td></td>
<td>• 2 mg / lamp</td>
<td>• 1.5 mg / lamp</td>
<td>• 2 mg / lamp</td>
<td>• 0 mg / lamp</td>
</tr>
<tr>
<td></td>
<td>• 6000 h</td>
<td>• 8000 h</td>
<td>• 8000 h</td>
<td>• 3000 h</td>
</tr>
<tr>
<td>Comm. Proposal (AED/unit)</td>
<td>10</td>
<td>15</td>
<td>25</td>
<td>10</td>
</tr>
</tbody>
</table>

- **Evaluation:**

<table>
<thead>
<tr>
<th>Commercial Evaluation</th>
<th>Price</th>
<th>Max points</th>
<th>Supplier 1</th>
<th>Supplier 2</th>
<th>Supplier 3</th>
<th>Supplier 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td></td>
<td>60</td>
<td>60</td>
<td>40</td>
<td>24</td>
<td>N/A</td>
</tr>
<tr>
<td>Technical Evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical compliance</td>
<td>30</td>
<td>25</td>
<td>25</td>
<td>30</td>
<td>Non-compliant</td>
<td></td>
</tr>
<tr>
<td>Green Benefit</td>
<td>10</td>
<td>1.7</td>
<td>2.5</td>
<td>4.2</td>
<td>Non-Compliant</td>
<td></td>
</tr>
<tr>
<td>Energy Efficiency</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mercury Content</td>
<td>5</td>
<td>1.7</td>
<td>2.5</td>
<td>1.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>100</td>
<td>86.7</td>
<td>67.5</td>
<td>58.2</td>
<td>Disqualified</td>
<td></td>
</tr>
</tbody>
</table>

Selection of Supplier 1, although it does not bring the best environmental outcome, provides both economic and green benefits, as it entails purchase of the cheapest product consistent with Core GPP Criteria.
Application steps: Design criteria - Example Indoor Lighting

Start

Need for lighting system redesign

1. Corporate policies
   2. Project specific objectives

Product category specific design criteria exist?

Yes

Select design criteria

No

Extent of redesign project?

Building

Apply max lighting density for building type in RFP

Individual Space / Usage

Include max. lighting density for space / usage in RFP

Include Control Requirements in RFP

Whole building approach:
Maximum lighting power density

<table>
<thead>
<tr>
<th>BUILDING TYPE</th>
<th>CORE CRITERIA</th>
<th>ENHANCED CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFFICE BUILDING</td>
<td>6.4</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Individual space approach:
Maximum lighting power consumed in the space / net floor area of space (W/m²)

<table>
<thead>
<tr>
<th>SPACE TYPE (USAGE)</th>
<th>CORE CRITERIA</th>
<th>ENHANCED CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDIENCE SEATING AREA</td>
<td>5.6</td>
<td>3.2</td>
</tr>
</tbody>
</table>
The development of common criteria for green procurement is an achievement which contributes to the leadership objectives of the Dubai Government.

- **First result of this kind in GCC**, bringing Dubai on par with leading markets in the green procurement field (e.g., Europe, US)

- Show **high levels of cohesion** achieved by the Dubai Government under the umbrella of the Dubai Supreme Council of Energy

- Contribute to the energy and water efficiency strategies of Dubai, and to global emission reduction targets, in line with international requirements (e.g., COP21)

- Support to the development of a **local market** for green products

- Bring **monetary savings** to the government on a life cycle cost perspective
7 Break-out sessions: application exercise
A case study for the application of the criteria for indoor lighting will be carried out in working teams supported by facilitators and experts.

### Case Study

“Call-off requisition” for an outline agreement, with expected annual volumes of a range of products with defined specification.

The Case Study will be carried out in 3 parts:

- **PART A:** Development of the Request for Proposal
- **PART B:** Development of the Evaluation Model
- **PART C:** Evaluation of Suppliers’ Bids
We expect each team to complete the assigned case and provide feedback on the following:

1. Case solution: up to selection of the supplier, with rationale

2. Expected impact of the criteria - Is the criteria bringing the expected benefits?

3. Challenges in applying the criteria - Is the criteria sufficiently clear and simple to be applied?

Moderators are expected to consolidate and present feedback from their team
8 Plan for testing the Criteria
Implementation of the criteria for indoor lighting needs to undergo a test phase

- **Core Criteria**
  - Each GPC member entity to implement criteria for 6 months across all purchases of lamps, as applicable

- **Enhanced Criteria**
  - Each GPC member entity to select at least 1 purchase for the application of enhanced criteria

- **Design Criteria**
  - Voluntary GPC member entities to test design criteria on 1 small scale upcoming project (retrofit or new installation)
We intend to conduct the relevant preparation and training by the end of January 2017, for implementation to start in February.

<table>
<thead>
<tr>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>D J F M A M J J</td>
<td>D J F M A M J J</td>
</tr>
</tbody>
</table>

1. Identification of involved teams
2. Training sessions
3. Preparation (scope def. traceability of purchases, eval. weights...)
4. Implementation (pilot phase)
5. Monitoring and reporting
6. Evaluation

Central team support
- Training
- Reporting templates

In addition to the workshop, a clarification/Q&A session will be available for each participating entity upon request in their premises. GPC Members to advise on need and suitable time.

Report to DSCE through DEWA
The preparation phase is important to prepare the involved teams for application of the criteria

Preparatory activities to be conducted by GPOs within their organization

Set-up

• Confirmation of involved teams
• Set-up of enforcement responsibilities and mechanisms (gate-keepers, verification methods, treatment of exceptions)
• Identification of method to track green spend on Indoor Lighting (Tracking of, e.g., purchase values and quantities for the product category, application of the criteria for each purchase order, and election of core vs. enhanced criteria for each P.O.)
• Set-up of the reporting process to DSCE (through DEWA) - every 2 months:
  – Feedback on the criteria (application issues, opportunities for improvement, e.g., threshold values, etc.)
  – Penetration of criteria, by type (core, enhanced)
  – Energy savings
  – Cost implications

Operation

• Guidance to involved teams on the criteria
• Consolidation and validation of reporting before submission

Decision Making

• Guidance on weightage to be applied for the Green Benefit in the evaluation criteria
• Selection of at least 1 purchase in which the enhanced criteria will be applied
• Identification (if possible) of a project for the application of the design criteria
The preparation phase should ideally include an internal communication within each participating organization

Main items for inclusion in the internal communication (to be issued or facilitated by GPOs within their organization prior to implementation)

- The DSCE Guidelines on GPP and the GPP Criteria
- Scope and objectives of the pilot
- Timing
- Monitoring and reporting requirements
- Recommended usage patterns
  - Core criteria
  - Projects where enhanced criteria are applied
  - Project where design criteria are applied
- Criteria (attachment)
The implementation phase foresees application of the criteria (in the ways to be specified in the internal communication)

Target starting date for implementation: February 1, 2017

Minimum duration of implementation: 6 months

Frequency of reporting: Every 2 months (first report expected in the first half of April 2017)
Reporting should cover 2 key areas and is supported by common forms/templates facilitating consolidation across entities

Reporting items

Qualitative assessment:
- Overall judgement on the criteria
- Organization readiness
- Implementation challenges
- Cost implications (semi-quantitative evaluation)
- Areas of improvement

Quantitative assessment:
- Penetration (in quantities and value, by type of criteria, core or enhanced)
- Energy savings (in % and kWh per year)

Reporting process

Start → GPO: Collect data/feedback from internal team → GPO: Provide summary report to DEWA focal point → DEWA: Consolidate into a report to GPC Committee and DSCE → End
Simple tools are made available to the teams to support execution

1. Criteria (Booklets)

2. Sample evaluation model

3. Monitoring and reporting templates
10 Closing note
Thank You