

# Smart Lighting Feasibility Study

■ Public Lighting Group

**Webinar**

22 NOVEMBER 2017

ARUP

PLG

## Agenda

### **Background**

What is Smart Lighting?

What is this study about?

### **Feasibility Study Outcomes**

Costs

Benefits

Considerations

Risks

Recommendations

### **Questions (15 mins)**

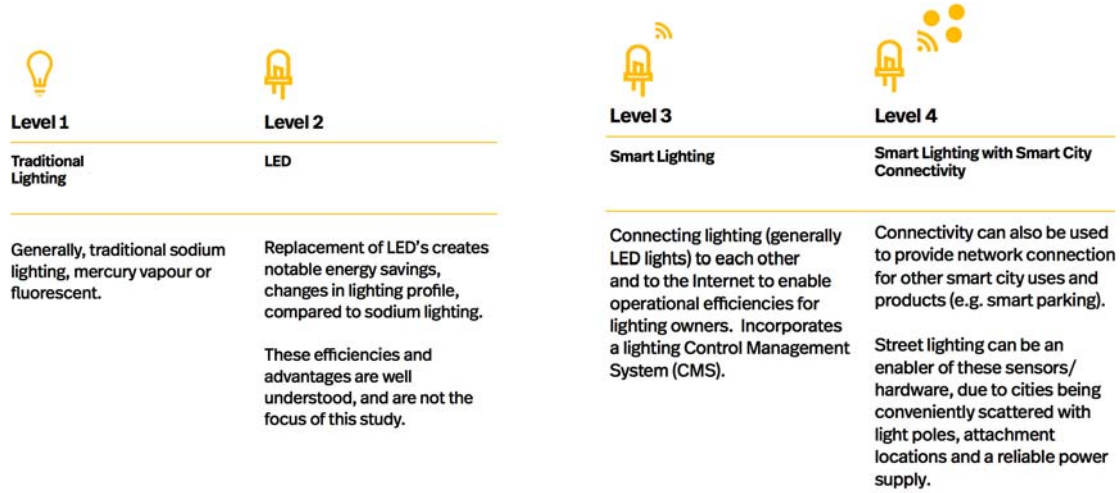
As messages

# Background

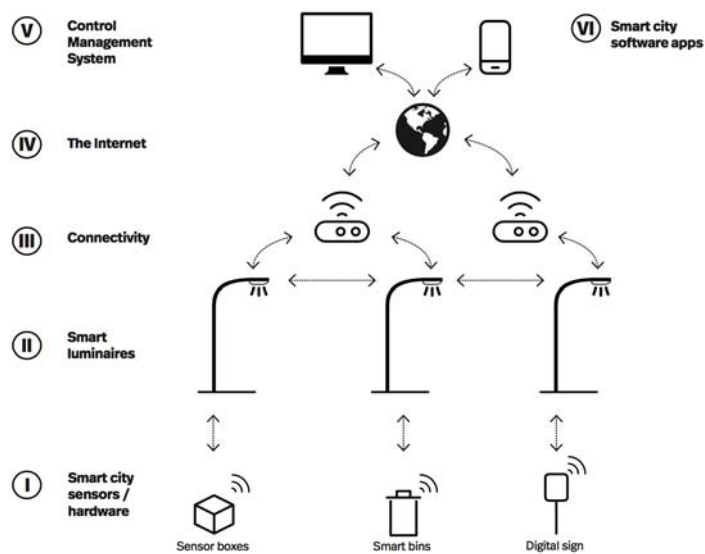
## What is Smart Lighting?

- 'Smart Lighting' describes LED lighting which has the ability to be controlled by a Central Management System (CMS).
- These systems provide operators with intelligent and flexible lighting control, individual control to street lights, dimming, and asset management.
- Many smart lighting products have inbuilt connectivity that can help connect other Smart City uses and products to the Internet.
- For example, a smart parking system can connect to the Internet via a smart lighting system to send data back to council officers or to car park users.

## Stages of Smart Lighting



## What is Smart Lighting?



### The Role of Smart Lighting



Power

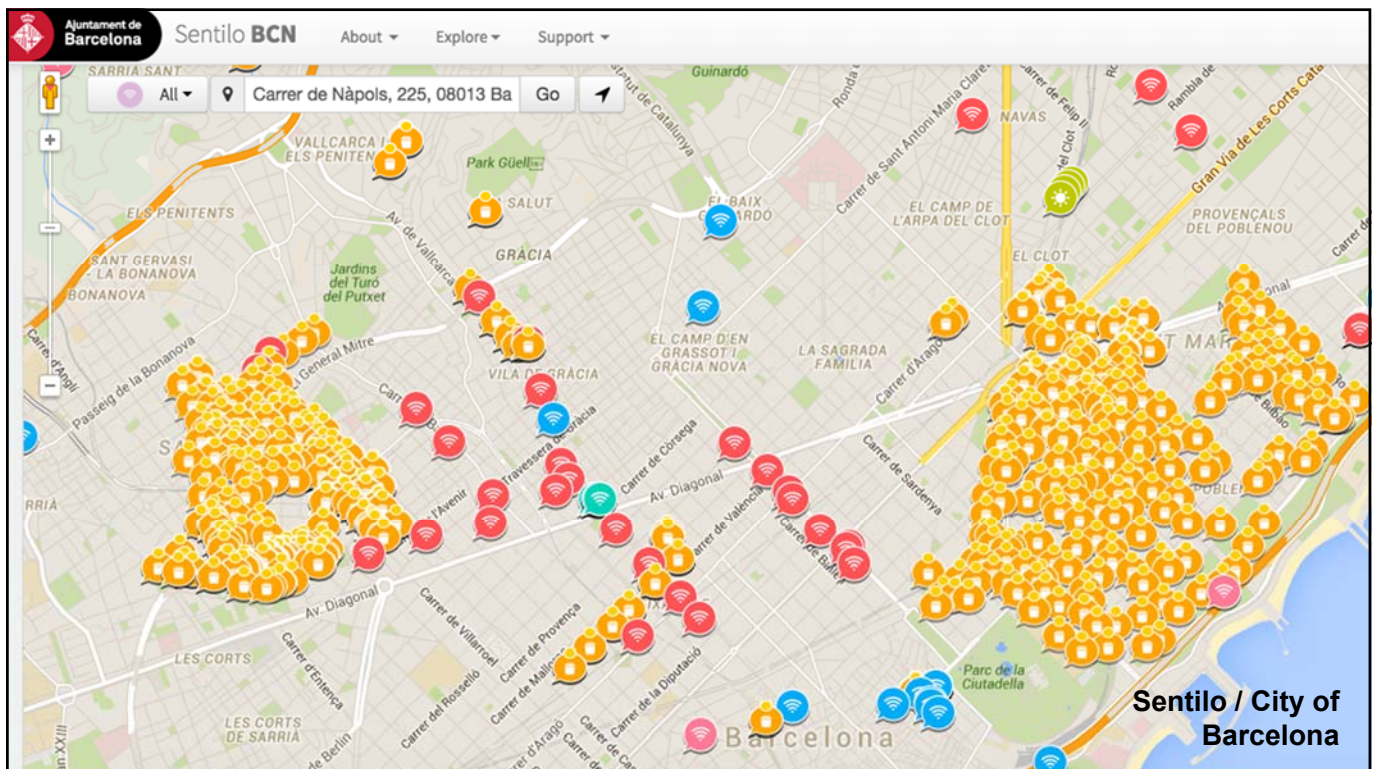
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Connectivity



Chicago Array of Things



## Study Deliverables



## Key Findings



## Smart Lighting Benefits

Energy efficiencies  
associated with smart  
lighting controls

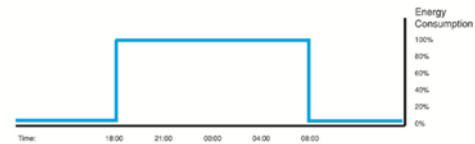
Operational efficiencies  
associated with smart  
lighting controls

Environmental benefits  
as a result of lower  
greenhouse gas  
emissions

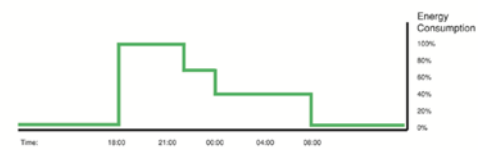
Public safety benefits  
associated with more  
responsive lighting levels

Enabling Smart City use  
cases and products

*LED lighting (without smart controls) energy consumption profile*



*LED lighting (with smart controls) energy consumption profile*



## Smart Lighting Benefits

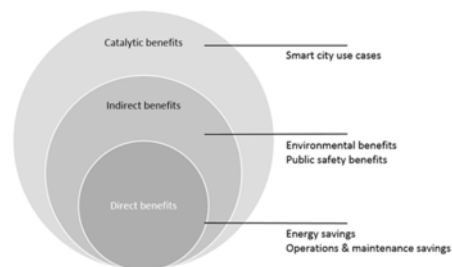
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### Smart Case Studies

Title/Source	Change	Description	Financial Costs	Financial Payback Period	Other Benefits
Aurich	Level 1 to 3	Installation of CityTouch CMS	Unknown	Unknown	0.14 tonnes of CO2 saved per light annually
Silver Spring Report (supplier commissioned)	Level 1 to 2	LED replacement only	Unknown	8 years	Unknown
Silver Spring Report (supplier commissioned)	Level 1 to 4	LED replacement with connected lighting	20% more expensive compared to normal LED replacement over lifetime (but higher benefits as well)	6 years	Additional financial savings driven by operational savings as well as increased energy savings from dimming and reduced nightly burn time enabled by the network.
Greater Geelong City Council	Level 1 to 4	Rollout of smart lighting in Ocean Grove shopping area	Unknown	Unknown	Public Wifi, public USB charging points - helping to activate Ocean Grove shopping area
San Diego	Level 1 to 4	Installation of LED luminaires, with connectivity and lighting control system (using GE LightGrid), associated smart city applications	Unknown	13 years	Dimming schedules to reduce light use
Dublin City Council	Level 1 to 3	Installation of LEDs with connected lighting	Unknown	8.6 years	7% energy saving compared to normal LED installation
Dublin City Council	Level 1 to 4	Installation of LEDs with connected lighting and connectivity for smart city uses	Unknown	9.1 years	7% energy saving compared to normal LED installation
Adelaide (Pirie St)	Level 1 to 3	Installation of LED luminaires in pedestrian area with dimming feature, pedestrian sensors	Unknown	Unknown	15% energy savings reported

### Smart Lighting Considerations

- Ownership
- Lighting Standards
- Regulatory Context
- Alternative Options

### The Role of Smart Lighting



Power

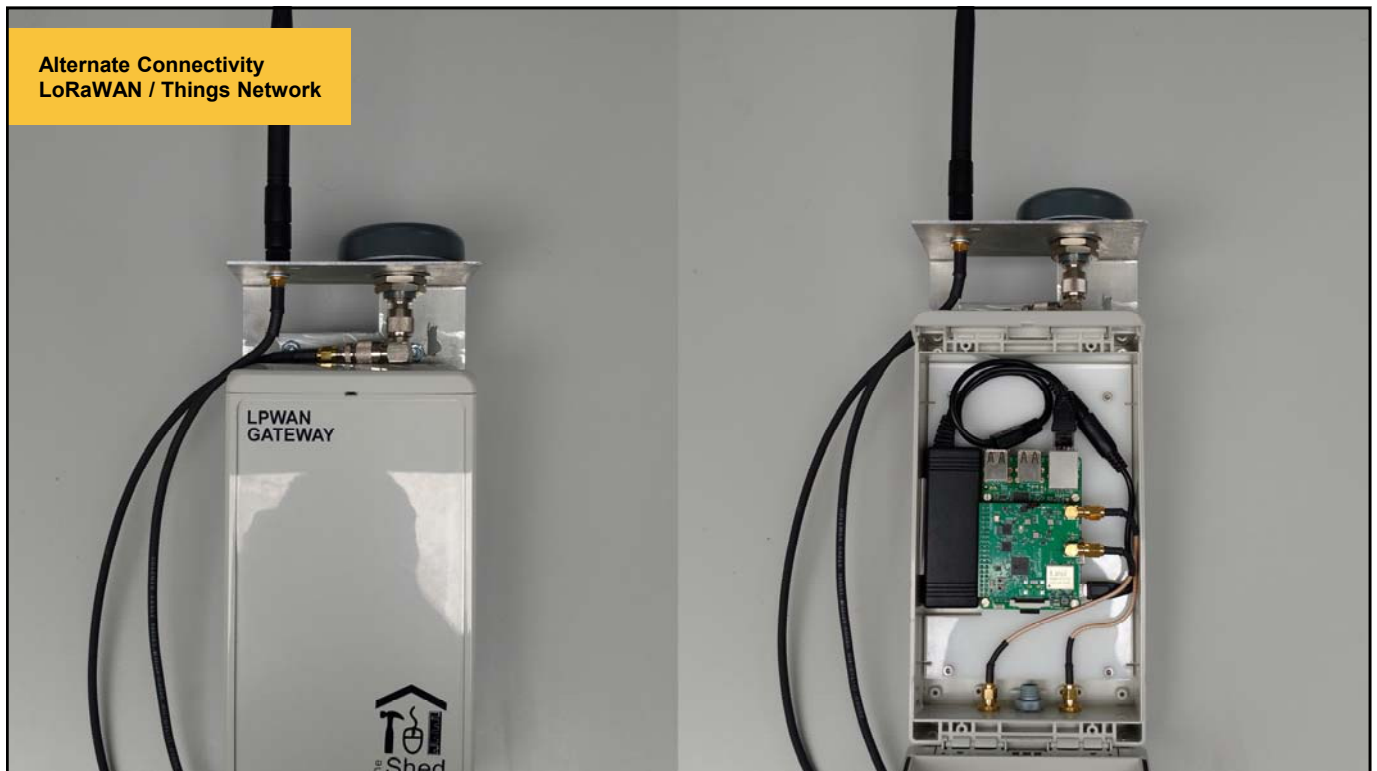
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Connectivity

### Alternate Connectivity Directional Wifi





### Alternate Power Sources



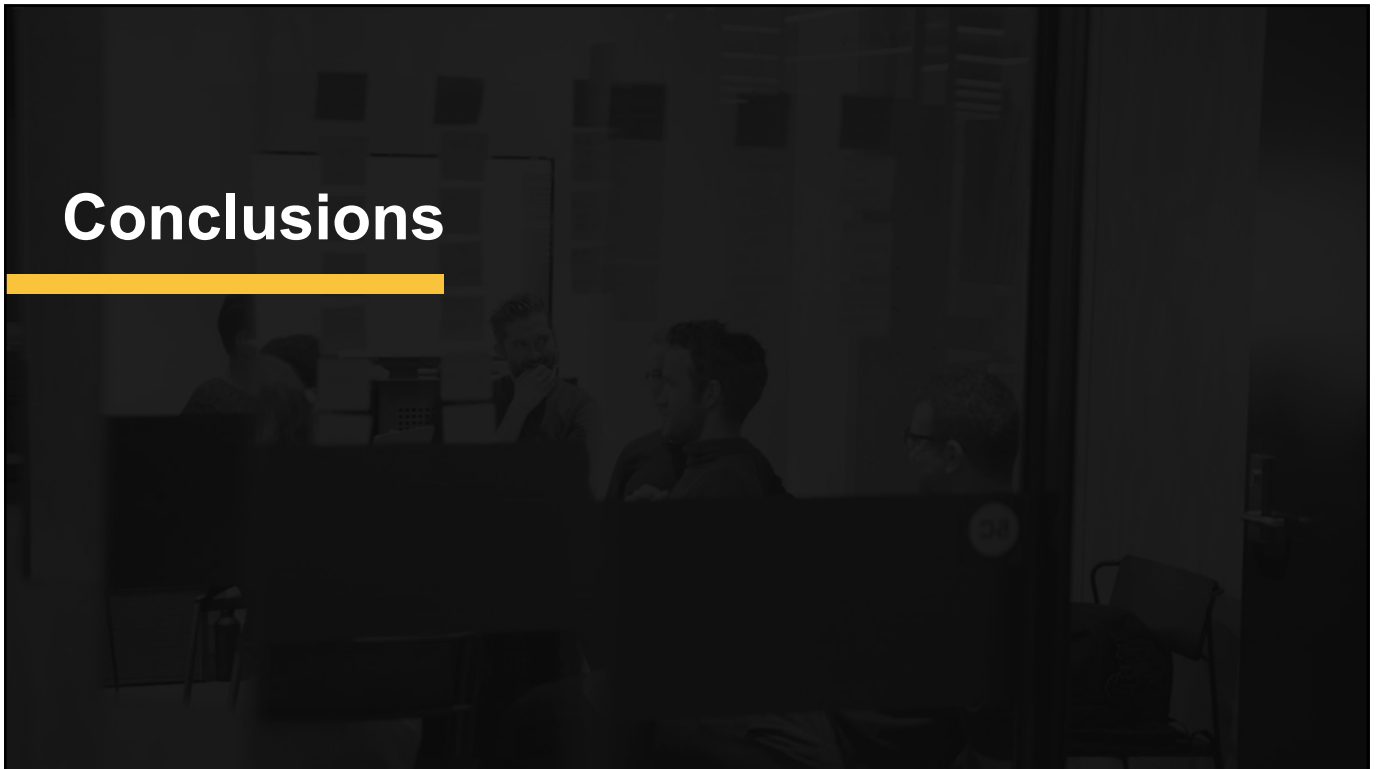
### Alternate Power Sources



### Smart Lighting Risks

- DNSPs- Benefit Capture
- Vendor Lock-In
- Data Management
- Funding
- Resourcing
- Benefits Realisation
- Technical Specifications for Smart City Uses
- Alternate Networks

## Conclusions



### Key Conclusions

- DNSP Challenges
- Limited Smart City Use Cases
- Pilots – Activity Centres
- Wider Rollouts

### Recommendation - Pilot

