

# ITU FG-SSC Report: EMF Considerations in Smart Sustainable Cities

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## Smart Cities and EMF



### Cities of the future? Indian PM pushes plan for 100 'smart cities'

By Casey Tolan, for CNN

July 18, 2014 -- Updated 0621 GMT (1421 HKT)



A rendering of the planned 'smart city' Dholera, in southern Gujarat, India. Prime Minister Narendra Modi has pledged to build 100 smart cities across the country.

RELATED KEYWORDS: [Water](#) | [power](#) | [NDMC-area](#) | [hi-tech-meters](#)

### Hi-tech meters for water, power

TNN | Oct 23, 2014, 03:30AM IST

NEW DELHI: As part of its smart city project, New Delhi Municipal Council has decided to upgrade the existing metering system for electricity and water connections. The civic agency will install radio frequency meters so that meter readings can be automatically updated. The pilot project will be implemented in Connaught Place.

*'...The evidence to date suggests exposures to the radio waves produced by smart meters do not pose a risk to health ...'*  
- Public Health England (2012)

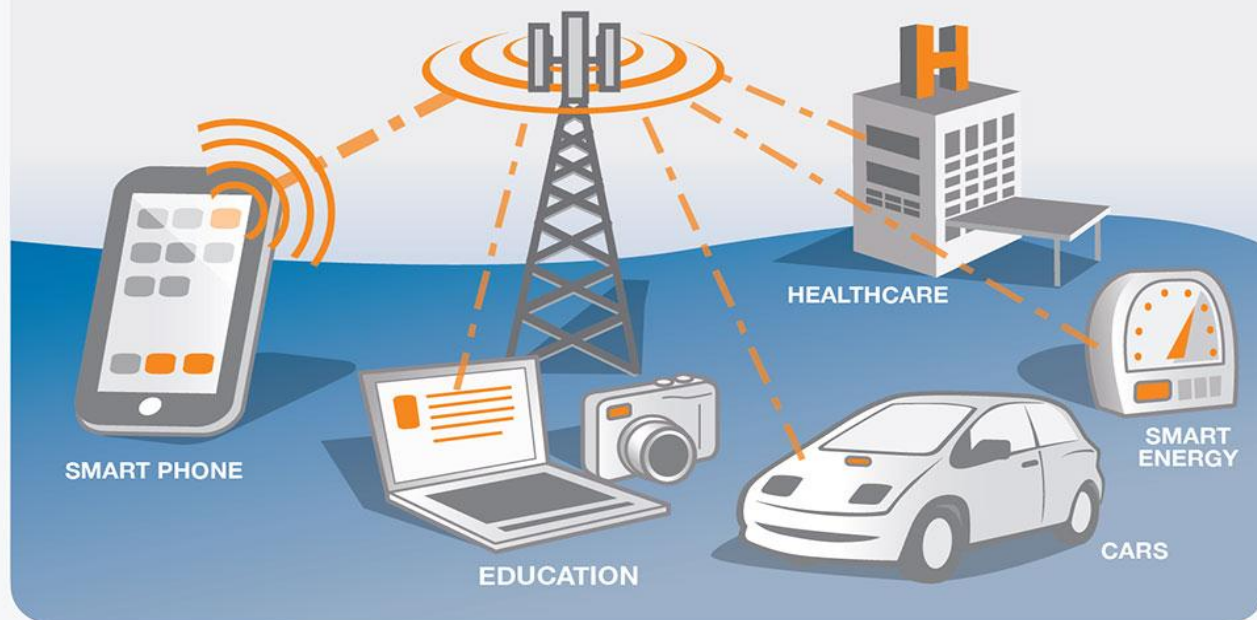
# Technical Report on the EMF Considerations in Smart Sustainable Cities

- Key Features:
  - provides guidance on implementation, and promotes efficient deployment of wireless networks in smart sustainable cities
  - features a 'Smart Sustainable City EMF Checklist'
  - designed to provide an easy to use reference for city officials and planners to ensure smart sustainable city policies operate efficiently and comply with EMF exposure standards
  - references WHO materials, ICNIRP Guidelines, ITU-T Recommendations and IEC Standards

# EMF Considerations in Smart Sustainable Cities

Wireless and wired networks provide the underlying connections that underpin Smart Sustainable Cities

## MOBILE NETWORKS CONNECTING THE COMMUNITY

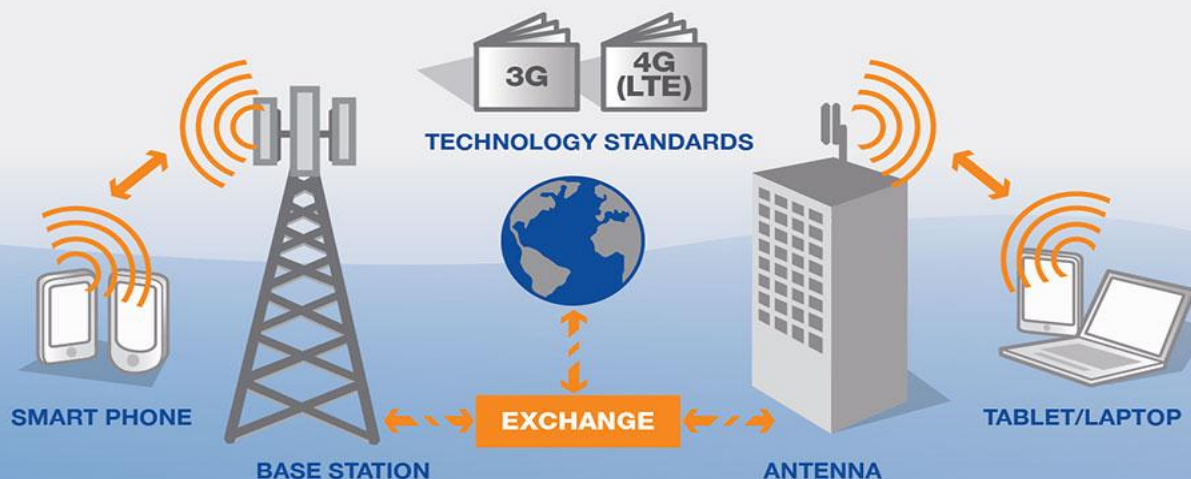


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# ICT Wireless Technologies – Mobile technologies

Mobile ICT devices and base stations operate at greatest efficiency and lowest power with careful network design

## THIRD GENERATION (3G) / LONG TERM EVOLUTION 4G (LTE)



### DATA SPEEDS

3G: LESS THAN 100MBS (TYP 3.6, 7, 14.4, 21, 42 MBS)

4G (LTE): DATA SPEED EXCEEDS 100MBS

INDICATIVE ILLUSTRATION ONLY

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# Community Information Consultation and Engagement

- Consultation and dialogue with communities is crucial in order to ensure that people who may have an interest or be affected by the deployment of new ICT technologies and systems are well informed.
- When a new development or technology appears in a town or local neighbourhood unexpectedly, local stakeholders can oppose it because they may feel offended or threatened by its appearance, or simply excluded from the process that led to its implementation.
- If people feel that their personal well-being or that of their family is being negatively affected in some way, their opposition to the new development can turn to anger or frustration with those responsible.



# Community Information Consultation and Engagement

- Key steps for successful consultation:
  - Build a working relationship with local stakeholders as a trustworthy and reliable party.
  - Ensure transparent information management to address concerns, reduce public scepticism, and make the issues more understandable.
  - Provide stakeholders with trusted sources of information, and/or foster a dialogue between the parties involved.
  - Emphasize the community benefits associated with improved mobile communications.
  - Find ways of providing people with a sense of involvement in the project, in order to reduce their perception of being 'powerless'.

# ICT Antenna siting approval requirements

Public wireless communications and ICT systems are key infrastructure for today's society..

- Key Issues:
  - ICT systems are particularly important in the event of emergencies and disasters.
  - Consistent planning rules for ICT infrastructure are critical for the efficient deployment and operation of ICT systems.
  - Fragmented planning authority rules may delay network deployments and may lead to ICT systems not functioning properly or experiencing intermittent service.
  - Could be life threatening in some situations.



# ICT Antenna siting approval requirements

## Key Planning Factors for Smart City deployment

- Small cells – planning exemptions
- Information, notification and consultation requirements
- Modifications to existing sites
- Mandatory decision periods
- Independent appeals process
- Environmental Impact Assessment (where necessary)
- Schools, hospitals and similar community facilities need service
- Improve access to public buildings and land
- Planning exclusion zones should be avoided

## EMF Checklist

- Key feature of the EMF Technical Report.
- Intended as an easy to use reference for city officials and planners to ensure smart sustainable city policies operate more efficiently and comply with EMF exposure standards.
- 10 Point Checklist with 3 Groupings:
  - EMF Compliance Items 1-4
  - Network Design & Efficiency Items 5-7
  - Consumer EMF Information Items 8-10

No	Smart Sustainable City - EMF Checklist	Check
1	<b>EMF Compliance Framework</b> Ensure an EMF compliance framework is established to protect the general public and workers from the adverse effects of EMF.	<input type="checkbox"/>
2	<b>ICT devices meet ICNIRP RF EMF exposure guidelines</b> Ensure that devices are assessed for compliance with the public exposure guidelines.	<input type="checkbox"/>
3	<b>Wireless networks meet ICNIRP RF EMF exposure guidelines</b> Ensure that the network sites are assessed for compliance to the ICNIRP guidelines, and that access controls and safety procedures are in place for working at antenna sites.	<input type="checkbox"/>
4	<b>Document RF EMF Compliance</b> Ensure the EMF compliance for the ICT devices and networks is documented.	<input type="checkbox"/>
5	<b>Base station antennas are selected to suit the ICT network requirements</b> Ensure that the appropriate base station antennas are used to improve ICT efficiency, provide services and integrate with the environment.	<input type="checkbox"/>
6	<b>Wireless network antennas are located in close proximity to the ICT devices</b> Ensure that network and base station antennas are located where the ICT devices are being used. This is essential to improve coverage and efficiency, and reduce the signal levels from the network and devices.	<input type="checkbox"/>
7	<b>Planning legislation incorporates ICT networks and antenna requirements -</b> Ensure more efficient deployment of ICT systems by a consistent approach to planning approval.	<input type="checkbox"/>
8	<b>EMF ICT compliance information is available</b> Ensure EMF compliance information is available.	<input type="checkbox"/>
9	<b>General EMF Information is available to the community</b> Ensure information reference for EMF information is the WHO and ITU resources.	<input type="checkbox"/>
10	<b>Existence of Wireless Network Information Program</b> Ensure availability of information based on credible sources and using appropriate communication channels addressing compliance, health concerns and <del>other</del> .	<input type="checkbox"/>

# EMF Checklist - Compliance

## Identifies the key elements for EMF compliance of networks and devices

No	Smart Sustainable City - EMF Checklist	Check
1	<b>EMF Compliance Framework</b> Ensure an EMF compliance framework is established to protect the general public and workers from the adverse effects of EMF.	<input type="checkbox"/>
2	<b>ICT devices meet ICNIRP RF EMF exposure guidelines</b> Ensure that devices are assessed for compliance with the public exposure guidelines.	<input type="checkbox"/>
3	<b>Wireless networks meet ICNIRP RF EMF exposure guidelines</b> Ensure that the network sites are assessed for compliance to the ICNIRP guidelines, and that access controls and safety procedures are in place for working at antenna sites.	<input type="checkbox"/>
4	<b>Document RF EMF Compliance</b> Ensure the EMF compliance for the ICT devices and networks is documented.	<input type="checkbox"/>

# EMF Checklist – Network Design & Efficiency

Identifies the key elements for wireless network deployment efficiency

No	Smart Sustainable City - EMF Checklist	Check
5	<b>Base station antennas are selected to suit the ICT network requirements</b> Ensure that the appropriate base station antennas are used to improve ICT efficiency, provide services and integrate with the environment.	<input type="checkbox"/>
6	<b>Wireless network antennas are located in close proximity to the ICT devices</b> Ensure that network and base station antennas are located where the ICT devices are being used. This is essential to improve coverage and efficiency, and reduce the signal levels from the network and devices.	<input type="checkbox"/>
7	<b>Planning legislation incorporates ICT networks and antenna requirements -</b> Ensure more efficient deployment of ICT systems by a consistent approach to planning approval.	<input type="checkbox"/>

# EMF Checklist – Consumer EMF Information

## Identifies the key elements for EMF Information

No	Smart Sustainable City - EMF Checklist	Check
8	<b>EMF ICT compliance information is available</b> Ensure EMF compliance information is available.	<input type="checkbox"/>
9	<b>General EMF Information is available to the community</b> Ensure information reference for EMF information is the WHO and ITU resources.	<input type="checkbox"/>
10	<b>Existence of Wireless Network Information Program</b> Ensure availability of information based on credible sources and using appropriate communication channels addressing compliance, health concerns and siting.	<input type="checkbox"/>

## Conclusions

- Wireless networks are essential for Smart Sustainable Cities.
- Efficient deployment of wireless infrastructure reduces the RF power from networks and devices = improved efficiency for ICTs.
- Smart Sustainable City policies should support efficient wireless technology deployment and compliance with EMF safety standards

### Recommendation

It is recommended that city officials and planners apply the 'Smart Sustainable City EMF Checklist' designed to provide an easy to use reference to ensure wireless ICT can operate efficiently and comply with EMF exposure standards.



*Thank you*



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