

Annexure 2

A	B	C	D	E	F	G	H	I	J	K
	Feature	Definition	Scenario 1 (BASE)	Scenario 2	Scenario 3	Scenario 4 (ADVANCED)	Self-assessment for the full city with regard to each feature	Basis for assessment and/or quantitative indicator (Optional - only if data exists)	Projection of 'where the city wants to be' with regard to the feature/indicator based on the city vision and strategic blueprint	Input/Initiative that would move the city from its current status to Advanced status (Scenario 4: Column G)
1	Citizen participation	A smart city constantly shapes and changes course of its strategies incorporating views of its citizen to bring maximum benefit for all. (Guideline 3.1.6)	The City begins identifies priorities and projects to pursue without consulting citizens.	City undertakes citizen participation with some select stakeholders. The findings are compiled and incorporated in some projects or programs. Very few major decisions are shared with -citizens until final projects are unveiled.	City conducts citizen engagement at city level and local area level with most stakeholders and in most areas. The findings are compiled and incorporated in projects or programs.	City constantly conducts citizen engagement with people at each Ward level to incorporate their views, and these shape priorities and development projects in the city. Multiple means of communication and getting feedback such, both face-to-face and online are utilised. The effectiveness of city governance and service delivery is constantly enhanced on the basis of feedback from citizens.	43% of people voted for scenario 1 which means the city begins and identifies priorities and projects without consulting citizens. But the city has some level of stakeholder participation in few decisions as 41% of people voted for second scenario which shows some level of improvement in two way communications.	BNN has a centralized complaint redressal system. Complaints can be made by calling on 0581-2550076 number and toll free number 18001803817 or by lodging it on-line on BNN website or by walking into BNN office. There are different camps organized once/twice a month to address grievances of citizens.	For a more vibrant city, public participation, to be incorporated for making policies at every level, is required. Public awareness is needed at various levels. Communication should be done through various modes so that it can reach all sections of society.	For a more vibrant city, public participation, to be incorporated for making policies at every level, is required. Public awareness is needed at various levels. Communication should be done through various modes so that it can reach all sections of society.
2	Identity and culture	A Smart City has a unique identity, which distinguishes it from all other cities, based on some key aspect: its location or climate; its leading industry, its cultural heritage, its local culture or cuisine, or other factors. This identity allows an easy answer to the question "why in this city and not somewhere else?" A Smart City celebrates and promotes its unique identity and culture. (Guideline 3.1.7)	There are few architectural monuments, symbols, and festivals that emphasise the unique character of the city. Built, natural and cultural heritage is not preserved and utilised or enhanced through physical, management and policy structures.	Historic and cultural resources are preserved and utilised to some extent but limited resources exist to manage and maintain the immediate surroundings of the heritage monuments. New buildings and areas are created without much thought to how they reflect the identity and culture of the city.	Historic and cultural heritage resources are preserved and utilised and their surroundings are well-maintained. Public spaces, public buildings and amenities reflect the cultural identity of the city:-	Built, natural and intangible heritage are preserved and utilised as anchors of the city. Historical and cultural resources are enhanced through various mediums of expression. Public spaces, open spaces, amenities and public buildings reflect local identity and are widely used by the public through festivals, events and activities.	First scenario in which the city has heritage or culturally important resources but is not managed properly. The city has Ala Hazrat Dargah, a world famous Mausoleum and is also known as Nath nagari. The local industries Zari-Zadosi, manjha, cane and bamboo are part of culture and identity of the city.	The production from zari-zardosi embroidery, manjha and Cane furniture is going down due to lack of facilities like transport, technology, infrastructure etc (MSME). Ala Hazrat dargah is preserved but the approach road and surroundings are not well-maintained.	In order to make Bareilly Economically vibrant, there is a need to preserve the heritage. The city aims to achieve scenario 4. The heritage and culture reflect local identity and should be made accessible in form of open spaces, amenities and buildings. Potential Tourism industry opportunities are visible.	ABD focuses on the development of the cultural industries like Zari-zardosi, rice mill and cane-bamboo. The people in the past shifted from these industries. It is expected that these industries will be revived. The proposal for work place strategy will further enhance the sector ensuring revival of the ecosystem.

3	Economy and employment	A smart city has a robust and resilient economic base and growth strategy that creates large-scale employment and increases opportunities for the majority of its citizens. (Guideline 2.6 & 3.1.7 & 6.2)	There are some job opportunities in the city but they do not reach all sections of the population. There are a high number of jobs in the informal sector without sufficient facilities.	There is a range of job opportunities in the city for many sections of the population. The city attempts to integrate informal economic activities with formal parts of the city and its economy.	There are adequate job opportunities for all sections of society. But skill availability among residents can sometimes be a challenge.	There are adequate opportunities for jobs for all sections of income groups and skill levels. Job-oriented skill training supported by the city and by industry. Economic activities are suited to and build on locational and other advantages of the city.	75% of the people voted for scenario 1, indicating some job opportunities but they do not reach all sections of the population. The city has high number of jobs in informal sector like manufacture of cane, Zari-Zardosi embroidery and rice mill but they don't have sufficient facilities. (MSME)	40% of the population lies below poverty line and 24% resides in slums. Many industries are also closing down in last decade, which is throwing huge %age of people out of jobs. The annual registration of industrial employment has reduced from 5148 in 2008-09 year to 4720 in 2010-11 year.	As per the vision, the city must be economically vibrant which means that the city needs better job opportunities for all sections of Income groups and skill levels. The city needs more Skill training centers and location based industries. The city aims to achieve scenario 4.	To achieve this vision, a special economic development zone has been proposed in 10% of the area based development to increase jobs from various sections of income groups and skill levels. ABD promotes MSME (2012) by providing industries of Zari-Zardosi, cane-bamboo and Rice mill. This will provide livelihood option.
4	Education	A Smart City offers schooling and educational opportunities for all children in the city (Guideline 2.5.10)	The city provides very limited educational facilities for its residents. There are some schools but very limited compared to the demand. Many schools are in poor condition.	City provides adequate primary education facilities within easily reachable distance of 15 minutes walking for most residential areas of the city. The city also provides some secondary education facilities.	City provides adequate primary and secondary education facilities within easily reachable distance for most residential areas of the city. Education facilities are regularly assessed through -databases of schools including number of students, attendance, teacher - student ratio, facilities available and other factors.	City provides adequate and high-quality education facilities within easily reachable distance of 10 minutes walking for all the residential areas of the city and provides multiple options of connecting with specialised teaching and multi media enabled education. Education facilities are regularly assessed through database of schools including number of students, attendance, teacher-student ratio, facilities available and other factors.	From census 2011 city has 373 primary schools, 599 middle and 84 secondary and 61 senior secondary which seems a huge number. According to discussions with mayor, city has good standard of higher education and has a capability to become an education hub which puts Bareilly in scenario 2.	The city has an illiteracy level of 39.8% which is way higher than average Indian urban illiteracy of 25.5%. This shows that though there is huge number of education facilities but they are not accessible to every section of society.	City will provide high quality of education within 10 minutes of walking distance from all residential zones. Education facilities will be assessed regularly and will be ensured that it reaches all sections of the society.	In ABD modernisation of existing school by converting existing classrooms into smart classrooms, and improving learning environment of the school.
5	Health	A Smart City provides access to healthcare for all its citizens. (Guideline 2.5.10)	Healthcare is difficult for citizens to access - demand for healthcare often exceeds hospitals' ability to meet citizen needs.	The city provides some access to healthcare for its residents but healthcare facilities are overburdened and far from many residents. Access to preventive health care is only easily available for some residents.	City provides adequate health facilities within easily reachable distance for all the residential areas and job centers of the city. It has an emergency response system that connects with ambulance services.	City provides adequate health facilities at easily accessible distance and individual health monitoring systems for elderly and vulnerable citizens which are directly connected to hospitals to prevent emergency health risks and to acquire specialised health advice with maximum convenience. The city is able to foresee likely potential disases and develop response systems and preventive care.	67% people voted for scenario 1 which states that in Healthcare access- demand often exceeds hospitals ability to meet citizens need. According to result of feedback form from citizens where preferred sector was asked only 2% people voted for that. These two responses are in contradiction to each other.	Bareilly has huge number of hospitals but there is a shortage of staff which are on contractual basis, absence of super specialist doctors (like neurosurgeon, cardiologist, Kidney specialist, pathologist etc) and lack of paramedical staf. Only 40% of slums have primary health facility out of 85 slums	Vision states that city should have Public health safety, for which it has to reach Scenario 3, i.e. adequate health facilities are at an easily reachable distance for all the residential areas and job centers of the city. Also it has an emergency response system that connects with ambulance service.	Proposal of Health MIS will be able to provide high public health safety as it is an integrated effort to collect, process, report and use health information and knowledge to influence policy and decision-making, programme action, individual and public health outcomes, and research.

6	Mixed use	A Smart City has different kinds of land uses in the same places; such as offices, housing, and shops, clustered together. (Guidelines 3.1.2 and 3.1.2)	The city has mostly separated uses and areas are focused either on residential, commercial, or industrial, with little co-existence of uses. The average resident cannot walk to the closest market or shops near his or her home. For almost everyone, going to work or going shopping for basic needs requires a journey by automobile or bus of more than 15 minutes. Land use regulations prevent putting commercial or office locations in residential neighborhoods and vice versa.	In some parts of the city , there is a mixture of land uses that would allow someone to live, work, and shop in close proximity. However, in most areas, there are only small retail stores with basic supplies near housing. Most residents must drive or use public transportation to access a shop for food and basic daily needs. Land use rules support segregating housing, retail, and office uses, but exceptions are made when requested.	Most parts of the city have housing, retail, and office buildings in close proximity. Some neighborhoods have light industrial uses within them (e.g., auto repair, craft production). Land use rules allow for mixed uses.	Every part of the city has a mix of uses. Everyone lives within a 15-minute trip of office buildings, markets and shops, and even some industrial uses. Land use rules require or encourage developers to incorporate a mixture of uses in their projects.	Bareilly has mostly separate uses for different land use. For most of the trip citizens are dependent on public transport which puts the city in scenario 1.	The city has an area of 106 sq km which has a potential to be a walkable city but it's not possible because of a segregated land use.	The city has a dense mixed use planning so that every facility is in close proximity of only 15 minutes trip distances to offices, markets, schools etc.	In Area – Based Development proposal for mixed land use will shorten the distances for the people to travel. Eg. Zari Zardosi workers may work from the same residential building and avoid transportation costs.
7	Compact	A Smart City encourages development to be compact and dense, where buildings are located close to one another and are ideally within a 10-minute walk of public transportation, forming concentrated neighborhoods. (Guidelines 2.3 and 5.2)	The city is expanding rapidly at its periphery into undeveloped land, rural or natural areas, or along industrial corridors - both formally and informally. Formal new development is occurring in a way that is "sprawling," meaning that the buildings spread across a wide area and are far from one another. Residents or tenants find it easier or safer to travel by automobile because it takes a long time to walk between destinations and there are busy roads separating buildings. Large pockets of land in the inner-city are vacant. New developments at the periphery tend to be large-scale residential developments, often enclosed with a gate and oriented to the automobile.	The city has one or two high density areas - such as the city center, or historic areas, where buildings are concentrated together and where people can walk easily from building to building and feel as though they are in center of activity. Most of the city consists of areas where buildings are spread out and difficult to walk between, sometimes with low-density, per hectare. Regulations tend to favor buildings that are separated from one another, with lots of parking at the base and set-back from the streets. The city likely has some pockets of under-utilized land in the center. New formal developments at the periphery tend to be large-scale residential developments, often enclosed with a gate and oriented to the automobile.	The city has multiple high density clusters that are easy to walk around where buildings are close together. However, the city actively encourages development to occur on under-utilized parcels of land into high-density, walkable areas. When new formal large-scale development projects happen at the periphery, they are encouraged to be dense and compact, with buildings that are close together and line the streets. The city actively encourages or incentivizes re-development of under-utilized parcels in the inner-city, especially those located close to public transportation.	The city is highly compact and dense, making the most of land within the city. Buildings are clustered together, forming walkable and inviting activity centers and neighborhoods. Regulations encourage or incentivize re-development of under-utilized land parcels in the city center. Buildings are oriented to the street and parking is kept to a minimum, located below ground or at the back of buildings. Public transport and walking connects residences to most jobs and amenities. Residential density is at an optimal with affordable housing available in most areas.	The city is expanding rapidly as new settlements are occurring in the periphery, majorly residential and industrial, but in a haphazard way. The settlements are causing an increase in travel distances, many pockets of the land is still empty in the city which depicts that city lies in scenario 1.	Bareilly has many residential schemes outside the city without any job opportunities. This disturbs the livelihood of the citizens eg. Ram ganga awas yojna. These kind of settlements of industries or residential increase the travel distances and also the service provision becomes difficult.	The Area based development focuses on scenario 4 in which buildings are clustered together and facilities are provided within walking distances. Further public transport and NMT will be encouraged for trips to work and other amenities. This will be also replicated throughout the city.	Area based development is designed considering 600 people per hectare. Neighbourhood planning is done in which social infrastructure is provided within the walkable distance of Residential zone. FSI is kept open for compact growth.

8	Public open spaces	A Smart City has sufficient and usable public open spaces, many of which are green, that promote exercise and outdoor recreation for all age groups. Public open spaces of a range of sizes are dispersed throughout the City so all citizens can have access. (Guidelines 3.1.4 & 6.2)	The city has very few usable public open spaces and very few usable green spaces. Available recreational spaces are located far away and are dispersed at long distances around the city. The few available public open spaces offer a limited variety of experiences for all sections of population and age groups such as places for sport, places for rest, and places for play.	A variety of public open spaces are available in some neighborhoods, but are not available in all the areas of the city or are located far away from residential areas -Many of the open spaces have access restrictions, or are not well-maintained. A variety of types of public open spaces may be lacking, such as natural areas, green areas, parks, plazas, or recreation areas.	Most areas of the city have some sort of public open space. There is some variety in the types of public spaces in the city. However, public spaces are sometimes not within easy reach or access of more vulnerable populations and are more restricted in poorer neighbourhoods.	Public open spaces are well dispersed throughout the city. Every residential area and work space has access to open space within 10 minutes walking distance. Open spaces are of various types - natural, green, plazas, parks, or recreation areas - which serve various sections of people. Public spaces tend to truly reflect the natural and cultural identity of the city.	43% of people voted in scenario 1 due to lack of maintenance of open places or grounds. Most of the parks only have boundary walls and gates. These parks have no amenities, benches and a few even lacks play equipment's and also gets flooded/ water logged except few parks	There are 254 parks and one fun city. But all are not well developed according to SLIP of the AMRUT mission; physical condition of parks is very poor. URDPFI – 2014 states that Bareilly has approximately 0.47 sq.m open space per person as compared to the standard 3 sq.m per person.	The part of vision states 'clean environment' which can be achieved through scenario 3. The open spaces in the city are not maintained therefore inaccessible for citizens. Hence maintenance of open spaces is needed so that it can be made open for all groups in society.	In Pan city proposal lighting up of all the streets and public spaces is proposed. This will make these open spaces more accessible to the public. The places will become safer as lighting improves visibility, safety of the public and better social interaction of people belonging to different age groups.
9	Housing and inclusiveness	A Smart City has sufficient housing for all income groups and promotes integration among social groups. (Guidelines 3.1.2)	Housing is very limited and highly segregated across income levels. Population growth far exceeds the creation of new housing. The poor live in informal settlements with limited to no access to basic services, and are concentrated in a few areas. The wealthy live in separate enclaves. Those in the middle have few , if any options.	Housing is available at most income levels but is highly segregated across income levels. Population growth slightly exceeds the creation of new housing. The wealthy and the middle class have housing that meets their needs at costs appropriate to their income. The poor live in informal settlements.	Housing is available at all income levels, but is segregated across income levels. The growth of supply of housing almost meets the rate of population growth. Increasingly, lower and middle-income people can find housing in areas that are conveniently located.	A wide range of a housing is available at all cost levels. The supply of housing is growing at pace with population. Affordable, moderate, and luxury housing are found clustered together in many areas of the city	The existing scenario 1, is pointing out the acute shortage for housing regardless of the economic condition. Many areas in the city are deprived of basic services. Most BPL/EWS and LIG households in cities live in informal settlements/slums on encroached lands.	The slum household is 24.1%. The housing deficit in slums is 28826 among which 11% are under hazardous situation. 87% of the slum households do not have access to individual water supply connections and 23% practice open defecation. 39 out of 47 slums are not connected to water supply system.	The city aims to achieve housing supply for all section of the society with all the basic facilities.	For achieving this, in ABD the housing deficit will be covered by providing houses for all sections such as EWS, LIG, MIG etc. at the same place mixed with each other. Facilities will be provided for all regardless of the section. Jobs will be provided for all in walking distance.
10	Transport	A Smart City does not require an automobile to get around; distances are short, buildings are accessible from the sidewalk, and transit options are plentiful and attractive to people of all income levels. (Guidelines 3.1.5 & 6.2)	Personal automobile centric city with very few modal options. Long trip lengths for daily commute to work and education. Accessing various areas by walking or cycling is difficult. Women and vulnerable sections find it very difficult to move independently in the city. There is limited public transport. Vehicles cause high air and noise pollution levels in the city. Vehicles dominate public spaces and affect their effective functioning.	The street network system is elaborate but public transport choices are restricted. Public transport can be too expensive or unaffordable for the poor. Pedestrian infrastructure is only available in select areas. The majority of investments focus on reducing traffic congestion through the creation of more roads.	Network of streets are fairly complete. Public transport covers most areas of the city. However last mile connectivity remains incomplete -and affects transport options: Foot paths are accessible in most areas, whereas-concerns of safe crossings and security throughout the day remain. Parking zones are demarcated but absence of pricing increases over utilization of parking lots.	Street network is complete and follows a clear structure. Public transportation network covers the entire city and intensity of connection relates with the demand. Plenty of options of public transport are available and affordable for all sections of the society. There is multi-modal integration at all mass transit stations and organized-priced on street and off street parking. Walking and cycling is prevalent.	53% voted for scenario 1 which indicates that the daily trip lengths are long for commuters. There is limited and poor public transport. Accessible issues for the dominant captive users who use bicycles and walk. The people prefer private modes over public transport.	The city lacks public transport system and designated parking lots . A majority of citizen's use shared Intermediate Public Transport such as cycle or auto rickshaws. The annual vehicular registration rate is 15.7% (2013-14) and 3.5% (2012-13) which indicate an increase in the private vehicle demand.	As per the vision, the city should have eco-friendly mobility. The city needs to have proper mobility plans that makes city pedestrian friendly with an ease of traffic movement. At present there are only autos and manual rickshaws for public transport	In ABD zone complete street is proposed. There will be an opportunity for transshipment hub.

11	Walkable	A Smart City's roads are designed equally for pedestrians, cyclists and vehicles; and road safety and sidewalks are paramount to street design. Traffic signals are sufficient and traffic rules are enforced. Shops, restaurants, building entrances and trees line the sidewalk to encourage walking and there is ample lighting so the pedestrian feels safe day and night. (Guidelines 3.1.3 & 6.2)	The city is designed mainly for the automobile. Daily life without a car requires long bus rides. Walking is difficult and often dangerous; there are few pavements, existing pavements need repair and lack trees to provide shade for pedestrians, and marked pedestrian crossings are rare. New buildings have their main entrances set-back from the street, sometimes with large driveways or parking lots separating them from the street, and sometimes are enclosed by gates. Traffic signals are often disobeyed	Older areas of the city see a mix of pedestrians, cyclists, and vehicles but newer areas are focused mainly on the automobile. In the new areas, there are few pavements and main entrances to new buildings are not accessible from the front of the street. large driveways or parking lots often separating them from the street, and sometimes are enclosed by gates. In these areas, traffic signals are disobeyed.	The city has a good network of pavements and bike lanes. Buildings in most areas of the city are easily accessible from the pavement. However, traffic signals are sometimes disobeyed and it can feel difficult to cross the street.	The city is highly walkable. Pavements exist on every street and are maintained. Trees line many sidewalks to provide shade for pedestrians. Buildings in most areas of the city are easily accessible from the sidewalk. Traffic signals control the flow of automobiles and are enforced. A network of bike lanes exists to promote cycling as a means of transport. Traffic rules are followed and enforced with great seriousness.	Scenario 1-There is a very urgent need for the infrastructure provisions for the pedestrians whom account for high %age of total trips in Bareilly City. The footpaths and crossing facilities are very poor or even nonexistent in most parts.	The city needs footpaths and cycle tracks as there are a large number of existing NMT users. The safety concerns for the pedestrians are to be incorporated as they share the ROW with motorized transport in most parts of the 650 km road network in Bareilly.	The city should be walkable with shaded pedestrian's sidewalks, controlled traffic and separate cycling tracks, which is scenario 4. Further, 40% of the population is under poverty line, this shows that the majority of people depend on NMT modes majorly cycles. There is a high demand for cycling tracks and sidewalks.	In Area-based development the blocks are designed considering walkable distances. Also the approach of compact mixed use development is adopted to make the city more easily accessible. Complete streets are provided with footpaths cycling tracks to make it safe for all the commuters
12	IT connectivity	A Smart City has a robust internet network allowing high-speed connections to all offices and dwellings as desired. (Guideline 6.2)	City has no major plans to bring increased high speed internet connectivity to the public.	The city has made plans to provide high speed internet connectivity through the existing framework.	The city makes has high speed internet connectivity available in most parts of the city.	The city offers free wifi services to provide opportunity for all the citizens to connect with high speed internet across the city.	60% people voted for scenario 1. No high speed internet connectivity plans for better services and improving 2-way connectivity with its citizens.	There is online complaint system and property tax payment system on website of nagar nigam i.e. "nagarnigambareilly.com". But the online complaints are negligible as most of the citizens don't have internet service where there are 829 complaints over 7 months by hand or through call for all sectors.	The city aims to achieve scenario 4 in which free Wi-Fi connectivity will be provided. So that they can access all the E-governance services easily from anywhere in the city.	A Pan city proposal of street lighting includes free Wi-Fi hotspots on different poles. In area based development also free Wi-Fi will be provided for all citizens. This is done to enhance the connectivity and improve citizen satisfaction.
13	ICT-enabled government services	A Smart City enables easy interaction (including through online and telephone services) with its citizens, eliminating delays and frustrations in interactions with government. (Guidelines 2.4.7 & 3.1.6 & 5.1.4 & 6.2)	Essential Government services are not linked with online platforms. Paper intensive interactions with the local Government continues. Recieving services and response to citizen complaints take a long time. There is limited availability of data to monitor service delivery.	Some of the public services are provided online and infrastructure for total digitalization is not in place. Service delays occur regularly in some sectors. Responses to citizen inquiries or complaints are often delayed. No integration between services and billing.	Most of the services are provided online and offline. Data transparency helps monitoring. Systema and processes to better coordinate between various Government agencies are being developed.	All major services are provided through online and offline platforms. Citizens and officials can access information on accounting and monitor status of projects and programs through data available on online system. Robust data infrasturcture system shares information and enhances internal governmental coordination.	Scenario 1-A need for E governance is prevalent. Many complaints are done via telephonic calls. There is limited availability of data to monitor service delivery to the public.	There are no Wi-Fi hotspots in the city and even the online property tax payments have just started in 2015. Most of the interactions with the local government are paper intensive.	All the services will be made available through both online and offline services. Citizens and officials can assess information and monitor the status of projects or programs through online data available. It will bring government services closer to the people.	E-governance will be provided by 100% computerization and free Wi-Fi, which will improve the communication between the government and the citizens. This will provide data sharing and will involve citizen's views in any proposal or policy making for the city. Both Online and offline participation will be promoted.
14	Energy supply	A Smart City has reliable, 24/7 electricity supply with no delays in requested hookups. (Guideline 2.4)	There is only intermittent electricity supply with regular power shedding. Many residents have to plan their days around when power is available.	Electricity supply and loads are managed as per demand and priority for various functions with clear scheduling, with electricity being available in many areas for most hours of the day.	Electricity is available in most parts of the city for most hours of the day but some areas are not so well-served. Smart metering exists in some parts of the city but not all.	Electricity is available 24 x 7 in all parts of the city with smart metering linked to online platforms for monitoring and transparency.	78% of the people voted for scenario 1 and also in the priority form maximum votes that are 39% were for this sector. This scenario shows that there are regular Power cuts and most cases are unattended for.	The scheduled supply of electricity is 20 hrs. with an outage of 4hrs per day. The total transmission, distribution and commercial losses for Bareilly have been estimated at 30% (ATC). 70% of all electricity costs are recovered by collection of bills with a collection efficiency of 80%. (Discussions with UPPCL)	The city aims to achieve 24x7 electricity supplies with smart metering. For transparent and convenient monitoring, online platforms will be used.	Area based development 'On Grid solar farms' are proposed to provide electricity for 4000 homes. This proposal will be able to provide electricity in any outages.

15	Energy source	A Smart City has at least 10% of its electricity generated by renewables. (Guideline 6.2)	The city does not have any renewable sources of energy and there is no commitment to promote this for the foreseeable future.	The city is preparing plans for ensuring that it gets more energy from renewable sources and is in the process of making commitments in this regard.	Some energy consumed in the city is produced through renewable sources. There are long term targets for higher renewable energy capacities and the city is making plans to achieve these.	At least 10% of the energy used in the city is generated through renewable sources. The city is undertaking long-term strategic projects to tap renewable sources of energy in its region/beyond to increase the percentage of renewable energy sources.	Scenario 1 -There is no renewable source of energy for the public uses. Further plans to promote renewable energy sources are also not in consideration from the city administration.	There is no renewable source of electricity except one solar plant in Faridpur area (70 kms) (2 MW). The number of electric connections is 177600 with maximum number of residential connection and an average growth rate of connections is 5% per annum. There is no policy to promote renewable-sources.	At least 10% of the energy from renewable sources should be achieved through scenario 4. At present the city has 4 hrs. of scheduled outages which can be reduced by increasing production of electricity from renewable sources.	Solar devices will be provided as a part of pan city and ABD. In Pan-city proposal solar panels will be provided on every street. LED lights to reduce electricity consumption. 'On Grid solar farms' are proposed to provide electricity to 4000 homes, in ABD and it can be replicated.
16	Water supply	A Smart City has a reliable, 24/7 supply of water that meets national and global health standards. (Guidelines 2.4 & 6.2)	The city has a poor water supply system with limited water availability. There are no clear targets to achieve higher quality and optimal quantity standards. Unaccounted water loss is above 40%	The city has intermittent water supply and availability. However it is setting targets and processes in place to try to improve its water supply. Unaccounted water loss is less than 30%.	The city has 24 x 7 water supply in most areas but the quality of water does not meet international health standards. Unaccounted water loss is less than 20%.	The city has 24 x 7 treated water supply which follows national and global standards and also available in sufficient quantity and affordable across all sections of the society. Unaccounted loss less than 15%.	73% voted for scenario 1 which is that, the city has a poor water supply system with limited water availability. Unaccounted water loss is above 40%. The sub-surface water is available at 20-30 ft but still the municipality provision is limited.	The total volume of water produced is 138 MLD, out of which 118 MLD from ground water sources. Water supply connections are low at 56.5% even though the water distribution network is 100%. Only 26% of the slum households have household level water supply connections. Non-Revenue Water is 30% (2015).	The city aims to provide 24x7 treated water supply. The unaccounted water loss should also be reduced to less than 15% from 40% at present, which is quite high affecting the water level. So, scenario 4 needs to be achieved in order to have sustainable water availability.	Proposal for having 24x7 water supply.
17	Water management	A Smart City has advanced water management programs, including smart meters, rain water harvesting, and green infrastructure to manage stormwater runoff. (Guideline 6.2)	The city does not measure all its supply. It does not recycle waste water to meet its requirements and rain water harvesting is not prevalent. Flooding often occurs due to storm water run-off.	The city has meters for all its water supply but lacks mechanisms to monitor. Water wastage is very high. Some, but not much, rainwater harvesting exists.	The city has meters for all its water supply with some smart mechanisms to monitor. Rainwater harvesting systems are installed and storm water is collected and stored in water bodies. However, recycling of waste water and reuse of storm water is limited.	The city has meters for all its water supply. It includes smart mechanisms to monitor remotely. Rainwater harvesting systems are installed and utilised through the city and storm water is collected and stored in water bodies and treated for usage. Recycled waste water is supplied for secondary uses.	Scenario 1 states that the city does not have any metering system, rain water harvesting or any recycling of water.	The water supply is not metered. (SLB, 2015) and even no infrastructure for rain water harvesting and any other green infrastructure.	Metering the water usage can reduce the loss to a great extent. Rainwater harvesting and water recycling is to be encouraged.	Proposal of Porous paths in ABD to conserve water. This will reduce the use of ground water to certain extent. Proposal of sensor based monitoring systems of possible overflowing of storm water chambers, by embedding wi-fi accessible sensors and relaying warning signals to the central control room.

18	Waste water management	A Smart City treats all of its sewage to prevent the polluting of water bodies and aquifers. (Guideline 2.4)	The city is unable to treat all its sewage. Many local sewer lines open on to water bodies and open ground and pollute the environment.	Most waste water is collected and treated before before disposal. However the treated water does not meet standards and is not recycled for secondary uses.	All the waste water is collected and treated before before disposal. It is also treated to a high standard and some is recycled.	The city has zero waste water because all the waste water is collected, treated and recycled. It meets standards an reduces the need for fresh water.	83% voted for the first scenario which means that the city is unable to treat the waste and the sewer is directly disposed in water bodies or open ground polluting the environment.	The assessment is quite true as there is no sewage treatment plant and the waste collected from 40% of the city's sewer line connection is directly dumped into rivers majorly Quilla river, polluting the environment. The total sewage generated is 135 MLD. Only 42% are connected to soak pits.	In order to achieve the vision for clean environment scenario 3 needs to be incorporated which states "The collection and treatment of waste water before disposal and the water gets treatment of high standard and some gets recycled."	In ABD, Proposal of Common Effluent Treatment Plant (0.5 MLD) of effluent waste water generated from industries established in the proposed area. Decentralized waste water treatment system for residential units is also proposed, total 11,368 units in the area and for each unit the FFBT can be installed.
19	Air quality	A Smart City has air quality that always meets international safety standards. (Guideline 2.4.8)	City does not have plans, policies or programs to improve the air quality. Systems to monitor air quality are absent.	City has programs and projects to monitor air quality and spatialising the data to ascertain reasons for degrees of pollution in the air. A few strategies to decrease air pollution have been implemented.	City has programs and projects to monitor air quality and spatialising the data to ascertain reasons for degrees of pollution in the air. Pollution levels are acceptable.	The city has clean air by international standards. Live Air quality monitoring cover the entire city and data of air quality are mapped.	The city lies in 1st scenario with no plans, policies or programs to improve air quality. City has 2 air quality monitoring systems.			In area based development, for improving Air quality, NMT will be promoted by providing complete streets. The plantation will be increased and many green spaces will be provided.
20	Energy efficiency	A Smart City government uses state-of-the-art energy efficiency practices in buildings, street lights, and transit systems. (Guideline 6.2)	City has no programs or controls or incentive mechanisms to promote or support energy efficiency in buildings	The city promotes energy efficiency and some new buildings install energy efficiency systems that track and monitor energy use and savings.	Most new public buildings install energy efficiency systems and some older buildings are also retrofitted to be more energy efficient. Local government conducts counselling and outreach with developer, businesses and residents to adopt energy efficiency strategies	All the existing old and new public buildings employ energy efficiency principles in development and operation and apply for energy rating by national and international forums. Many non-public buildings are also energy efficient because the government promotes energy efficiency through incentives and regulations.	City lies in first scenario as there are no programs or incentives for energy efficiency.	There are no energy efficiency practices in the city.	City is planning to achieve scenario second by providing LED based street lighting system.	Proposed use of LED street lights in place of non- efficient sodium bulbs in both Pan City and Area Based Development approaches, as tool to achieve energy efficiency and reduce overall electricity bills.
21	Underground electric wiring	A Smart City has an underground electric wiring system to reduce blackouts due to storms and eliminate unsightliness. (Guideline 6.2)	City does not have plans for underground electric wiring system.	More than 40% of the city has underground electric wiring system.	More than 75% of the city has underground electric wiring system.	More than 90% of the city has underground electric wiring system.	The city lies in 1 st scenario as there is no proposal of doing distribution lines underground.	Under the RAPDRP plan, all HT lines are to be laid underground with a length of 200 kms, 20% of the entire project has been implemented. Other than that there is no proposal for making distribution lines underground.	The Area based development focus on 4th scenario which says 90% of the city has underground electric wiring. This will also be replicated to the whole city.	In Area based development, all the wiring will be kept underground. This will ensure electricity supply even in storms and heavy rainfall.

22	Sanitation	A Smart City has no open defecation, and a full supply of toilets based on the population. (Guidelines 2.4.3 & 6.2)	Many parts of the city do not have access to sanitation infrastructure and facilities.	Sanitation facilities are available to 70% of the city's population.	Sanitation facilities are available to 90% of the city's population.	Sanitation facilities are available to 100% of the city's population.	42% people voted for first-scenario and 36% for second-scenario. The first scenario is many parts of the city does not have access to sanitation and second is Sanitation facilities are available to 70% of the city's population. The voting shows that the city is improving from 1 st scenario to 2 nd .	As per Census 2011, 96% of the total households have latrines. Amongst these, 46% are connected to piped sewer system and 42% to soak pits, in that 4% households do not have access to latrines and 3% defecate in open while only 1% dependent on community toilets.	Clean environment which can be ensured by 100% availability of sanitation facilities which is scenario 4. It can be achieved by providing toilets to all sections of society with the help of number of schemes like Swachh bharat mission.	The city is already working on achieving 100% sanitation facilities by constructing toilets under govt. scheme of swachh bharat mission. In ABD, E toilets are proposed in which automatic cleaning will be ensured and also water usage will be monitored.
23	Waste management	A Smart City has a waste management system that removes household and commercial garbage, and disposes of it in an environmentally and economically sound manner. (Guidelines 2.4.3 & 6.2)	Waste collection systems do not pick up waste on a frequent basis and waste often enters into water bodies.	Waste generated is usually collected but not segregated. Recycling is attempted by difficult to implement.	Waste is segregated, collected, recycled and disposed in an environmentally sound manner.	The city reduces land fill caused by waste so that it is minimal. All the solid waste generated is segregated at source and sent for recycling. Organic waste is sent for composting to be used for gardening in the city. Energy creation through waste is considered.	Scenario 2-This is because the city has just started the door-to-door collection system, even earlier the waste was collected from community bins to the dumping site. The segregation is not yet started.	The door-to-door collection is only covering 25% of the city. The city don't have any waste segregation and solid waste treatment plant. Daily, 300 MT of waste is collected but there is no treatment and recycling system.	To ensure clean environment solid waste management is an important component It can be accomplished through scenario 3 which states; Waste should be segregated, collected, recycled and disposed in an environmentally sound manner.	To achieve this SWM with GPS tracking system is installed under Area based proposal to ensure 100% waste collection. It can be replicated throughout the city. The city has already taken efforts under the scheme Swachh bharat mission and has started door to door collection since 2 nd oct 2015.
24	Safety and security	A Smart City has high levels of public safety, especially focused on women, children and the elderly; men and women of all ages feel safe on the streets at all hours. (Guideline 6.2)	The city has low levels of public safety - most groups of residents feel insecure during most parts of the day in many parts of the city.	The city has medium levels of public safety - some more vulnerable groups feel insecure during some points of the day and in some parts of the city	The city has high levels of public safety - all citizens including women, children and the elderly feel secure in most parts of the city during most time in the day.	The city has very high levels of public safety - all residents feel safe in all parts of the city during all hours of the day.	The city lies in second scenario where medium level of public safety is there. Only some areas get insecure during some points of the day.	There are 24 police stations and have PCR vans for patrolling throughout the day. The emergency numbers are 1090 for children and women safety and 100 for police.	In order to have adequate Public safety in the City, scenario 4 is to be achieved. It focuses on safety of all residents throughout the day in all parts of the city.	PAN city proposal of street lighting to improve road safety for residents by illuminating the unused parts and creates a sense of safety. Further CCTV surveillance system will increase the eyes on the road. In ABD, 300 outdoor CCTV cameras installed for an area of 260 hectares ensuring safe streets.