SURAT MUNICIPAL CORPORATION

SEWERAGE AND
SOLID WASTE MANAGEMENT
GLORY OF SURAT

- Economic capital of Gujarat
- Home to Textile and Diamond industry
- 28% of the nation’s total man made fibre production
- 40% of the nation’s total man made fabric production
- More than 500,000 power looms and 350 process houses
- Traditional Zari and Zardosi work
- 70% of nations diamond cutting and polishing units
- More than 5 lakh workers employed in the industry
- Spin-offs from proximity to Hazira
- Peace-loving, resilient and harmonious environment
GROWTH OF CITY

- Historical Development Of Surat Dates Back To 300 BC.
- Municipality Established In 1852 AD.
- Municipal Corporation Formed In 1966.

<table>
<thead>
<tr>
<th>Year</th>
<th>Area in Sq. Km</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1951</td>
<td>8.18</td>
<td>2,23,182</td>
</tr>
<tr>
<td>1961</td>
<td>8.18</td>
<td>2,88,026</td>
</tr>
<tr>
<td>1971</td>
<td>33.85</td>
<td>4,71,656</td>
</tr>
<tr>
<td>1981</td>
<td>55.56</td>
<td>7,76,583</td>
</tr>
<tr>
<td>1991</td>
<td>111.16</td>
<td>14,98,817</td>
</tr>
<tr>
<td>2001</td>
<td>112.27</td>
<td>24,33,785</td>
</tr>
<tr>
<td>2001</td>
<td>326.51</td>
<td>28,77,241</td>
</tr>
<tr>
<td>2011</td>
<td>326.51</td>
<td>~ 44 Lakhs</td>
</tr>
</tbody>
</table>
CITY EXPANSION

- Unprecedented growth in last four decades.
- 10-fold population rise.
- Now ranks the 8th largest city in the country.
- Jurisdictional limits extended to 3 fold.
# Administrative Zones

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Zone</th>
<th>Area (in Sqkm)</th>
<th>City</th>
<th>Population (Census-2001)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Central</td>
<td>8.18</td>
<td></td>
<td>4,13,641</td>
</tr>
<tr>
<td></td>
<td>South-West</td>
<td>111.91</td>
<td></td>
<td>2,43,333</td>
</tr>
<tr>
<td></td>
<td>South</td>
<td>61.76</td>
<td></td>
<td>4,07,980</td>
</tr>
<tr>
<td></td>
<td>South-East</td>
<td>19.49</td>
<td></td>
<td>3,19,502</td>
</tr>
<tr>
<td></td>
<td>East</td>
<td>37.52</td>
<td></td>
<td>7,17,271</td>
</tr>
<tr>
<td></td>
<td>North</td>
<td>36.36</td>
<td></td>
<td>4,16,370</td>
</tr>
<tr>
<td></td>
<td>West</td>
<td>51.27</td>
<td></td>
<td>2,87,144</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>326.51</strong></td>
<td></td>
<td><strong>28,77,241</strong></td>
</tr>
</tbody>
</table>
## ADMINISTRATIVE OVERVIEW

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Estd.</th>
<th>AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporation</td>
<td>Estd.</td>
<td>AD</td>
</tr>
<tr>
<td>Area</td>
<td>.51 sqkm.</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>.47 Million (2001)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.88 Million (2001 with extended area)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>~ 4.4 Million (2011)</td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>.4 Persons/Ha (Within 112 Sq Km Area)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>85.9 Persons/Ha on 2001 for 326 Sq Km Area)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(~122.5 Persons/ Ha as on 2007)</td>
<td></td>
</tr>
<tr>
<td>Decadal Growth Rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admn. Zones</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ward Offices</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>Civic centres</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Election Wards</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ORGANISATION STRUCTURE

Commissioner

Div. / Zonal Head

Executive Engineer

Engineering

Dy. Engineer
Asst. Engineer
Jr. Engineer

Health

Dy. MOH /
Asst. MOH

Administration

ARO, ALO
Dy. Accountant
Personnel Officer

Execution of Capital Projects
O & M of Services
Development Control

Sanitation
Disease Control & Monitoring
Market
Control of Vector Born Disease

Tax
Accounting
Establishment
Personnel
Gen. Administration
LIQUID/SOLID WASTE MANAGEMENT SYSTEM

Collection

Transportation/Transmission

Treatment

Disposal
SUSTAINABILITY

- Environmentally Sustainable
- Financially Sustainable
- Selection of Adequate model (PPP or EPC)
- Selection of Proper Technology
- Financial Support from Government
- Public Participation
SEWERAGE SECTOR

SMC
FUNCTIONS

• At Department Level
  – Planning, Designing, Estimating, Tendering, Execution and Operation-Maintenance of the sewerage systems, includes sewage pumping stations, sewage pumping mains, sewage treatment and effluent disposal works etc.
  – All capital works related to Sewerage System

• At Zone Level
  – Society drainage connections
  – Household drainage connections
  – Maintenance of sewerage network
<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage</td>
<td>149 sq.km. (i.e. 74 % of present habitable area of @ 204 sq.km.)</td>
</tr>
<tr>
<td>Population catered</td>
<td>91 % of present population</td>
</tr>
<tr>
<td>Length of sewer network</td>
<td>1501 km</td>
</tr>
<tr>
<td>Nos of sewer manholes</td>
<td>&gt; 57,000</td>
</tr>
<tr>
<td>Sewage Pumping Stations</td>
<td>41 Nos (1654 MLD)</td>
</tr>
<tr>
<td>Sewage Treatment Plants</td>
<td>9 Nos (726.5 MLD)</td>
</tr>
<tr>
<td>Cap. Expenditure in Last 7 yrs</td>
<td>Rs. 541 Crore</td>
</tr>
</tbody>
</table>
Total Sewage Treatment Plants  9 nos.

▲ Existing STP – 9 Nos.
   – 726.5 MLD

▲ STPs under Augmentation- 2 Nos
   - 97 MLD

▲ STP to be commissioned – 1 Nos.
   – 66 MLD

▲ STP Under Planning– 3 Nos.
   – 93 MLD
## SEWAGE TREATMENT PLANTS

### Existing STPs

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anjana</td>
<td>82.50 MLD</td>
</tr>
<tr>
<td>Bhesan</td>
<td>100.00 MLD</td>
</tr>
<tr>
<td>Bhatar</td>
<td>120.00 MLD</td>
</tr>
<tr>
<td>Karanj</td>
<td>100.00 MLD</td>
</tr>
<tr>
<td>Singanpore</td>
<td>100.00 MLD</td>
</tr>
<tr>
<td>Bamroli</td>
<td>100.00 MLD</td>
</tr>
<tr>
<td>Khajod</td>
<td>25.00 MLD</td>
</tr>
<tr>
<td>Asarma</td>
<td>15.00 MLD</td>
</tr>
<tr>
<td>Variav-Kosad</td>
<td>84.00 MLD</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>726.50 MLD</strong></td>
</tr>
</tbody>
</table>

### STPs: Under Implementation

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dindoli</td>
<td>66.00 MLD</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>66.00 MLD</strong></td>
</tr>
</tbody>
</table>

### STPs: Under Augmentation

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siganpore</td>
<td>55.00 MLD</td>
</tr>
<tr>
<td>Bhatar</td>
<td>42.00 MLD</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>97.00 MLD</strong></td>
</tr>
</tbody>
</table>

### Discharge as per GPCB standards

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameters</th>
<th>Unit</th>
<th>Treated Effluent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PH</td>
<td>-</td>
<td>6.9 to 7.5</td>
</tr>
<tr>
<td>2</td>
<td>BOD$_5$</td>
<td>mg/l</td>
<td>≤ 20</td>
</tr>
<tr>
<td>3</td>
<td>COD</td>
<td>mg/l</td>
<td>≤ 100</td>
</tr>
<tr>
<td>4</td>
<td>Suspended Solids</td>
<td>mg/l</td>
<td>≤ 30</td>
</tr>
</tbody>
</table>
Factors for Technology Selection

- Characteristic of Raw sewage
- Foot Print area
- Disposal Norms specified by PCB
- Energy Consumption/ Generation
- Trouble shooting
- Efficiency in Process control
SEWAGE TREATMENT PLANTS

• Latest technology adopted for Sewage treatment plant
  - MBBR (Moving Bed Bio Reactor) for STP at Asharma & Khajod
  - UASB+MBBR (Up-flow Anaerobic Sludge Blanket + Moving Bed Bio Reactor) treatment technology for New Northern Drainage Zone.
  - SBR (Sequential Batch Reactor) for STP at Siganpore and Bhattan

• Use of Mechanical Dewatering System for Sludge Drying
  - Belt Filter Press
  - Centrifuge
ENVIRONMENTAL SUSTAINABILITY

SEWAGE GAS BASED POWER PLANT

• 0.5 Mwe Power Plant at Anjana STP running successfully since 2003.

• 1.0 Mwe Power Plants at Bhatar karanj & Singanpore STP each are operational since 2008.

• Construction work of 0.75 Mwe Power Plant at New East zone area and 0.60 Mwe power plant at New North zone area is recently completed under JnNURM.

• **Construction of 0.5 MW biogas plant at bamroli is under Progress.**

• Planned to establish Sewage gas based Power plant for all forthcoming STP.

• Forthcoming STPs will be operated with contractor’s responsibility to produce guaranteed power generation.
SEWAGE GAS BASED POWER PLANTS
# Power Generation till March-13

at various sewage gas based power plant

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of STP</th>
<th>Installed Capacity of Power Plant</th>
<th>Year of Commissioning</th>
<th>KWH units generated</th>
<th>Generation ( in Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anjana</td>
<td>0.5 MWe</td>
<td>Oct-03</td>
<td>16179472.00</td>
<td>71627918</td>
</tr>
<tr>
<td>2</td>
<td>Singanpore</td>
<td>1.0 MWe</td>
<td>Mar-08</td>
<td>7338832.00</td>
<td>34761513</td>
</tr>
<tr>
<td>3</td>
<td>Karanj</td>
<td>1.0 MWe</td>
<td>Mar-08</td>
<td>12101485.00</td>
<td>58511299</td>
</tr>
<tr>
<td>4</td>
<td>Bhatar</td>
<td>1.0 MWe</td>
<td>Aug-08</td>
<td>3700482.00</td>
<td>17742772</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>39320271</strong></td>
<td><strong>182643500</strong></td>
</tr>
</tbody>
</table>
ENVIRONMENTAL SUSTAINABILITY
WASTE WATER RECYCLING

- To set up a 40 MLD capacity Tertiary Treatment Plant (TTP) to treat secondary treated water from Bamroli Sewage Treatment Plant (100 MLD capacity) to supply Industrial Grade Water to Pandesara Industrial Estate through Surat Municipal Corporation.
  - Reuse of waste water.
  - Contribution towards reducing the dependency on conventional resources of water.
TERTIARY SEWAGE TREATMENT PLANT

**Project Features:**
- Capital Project cost: Rs. 85.10 crores
- Project completion time: 18 months
- Capacity of Tertiary Sewage Treatment Plant: 40 MLD
- An option to scale up in a modular fashion to 80 MLD in future
- Payback Period: 4-5 Years
- Present Fresh water cost to industries: Rs. 24 /KL
- Proposed Recycle water cost to industries: Rs. 18/ KL

**Technology Used:**
- Sand Filtration
- Ultra-filtration
- Reverse Osmosis (RO)
WASTE WATER RECYCLING

• Enable SMC to reduce pressure on water resources in the city
• Potable water presently supplied to Pandesara Industrial area, will be diverted for the drinking water purpose.
• Reduces diversion of drinking water for non-potable purposes.
• Dependence of Pandesara Industrial Units on bore-wells and private tanker operators will be eliminated.
• Conserve valuable ground water resources for future generation.
• Assured resource for Pandesara during scarcity.
• Guaranteed revenue generation for Surat Municipal Corporation
• Facilitates recycling of wastewater - an environmentally sound and progressive advance practice.
SUSTAINABLE APPROACH:
COMMON EFFLUENT TREATMENT PLANT

• Project Cost: Rs. 119.00 Crores

• Project Components
  • Wastewater Collection Network - 21 km
  • Pumping Station - 140 MLD
  • Conveyance Line - 3.5 km
  • CETP - 100 MLD

• Financial Assistance is provided by SMC to Industrial Association.

• Expenditure for CETP borne by Pandesara Industries with government assistance.

• System Commissioned in January 2011.
INNOVATIVE PRACTICES

Automation / SCADA of Existing Sewage Pumping Station & Sewage Treatment Plants.

SCADA project for existing 23 Sewage Pumping Stations and 6 Sewage Treatment Plants approved under JNNURM scheme.

• On line Data Monitoring and Controlling.
• Advance Planning for preventive maintenance and reducing break down period.
• On line electrical data to be use to improve energy efficiency and energy audit.
• Optimization of establishment cost.
• Reduced plant equipment maintenance cost in the long run.
SCADA SYSTEM - BENEFITS

- Better management of Sewerage System through remote monitoring & operation of Sewage Pumping Stations and Treatment Plants.
- Energy Saving through Efficient and optimum Operation of pumping machineries.
- Energy Saving at treatment plant through operation of machineries according to process requirement.
- Better Protection of environment through online monitoring of inlet & outlet parameters, process reliability and effective disposal of domestic sewage, solids and bio-gas.
- SCADA process tools improves the efficiency & effectiveness of manpower.
**SCADA SYSTEM - BENEFITS**

- Measurement and data storage of all process parameters can be utilized for analysis & study, which will help for better process operation and R&D.
- Equipment availability and process reliability achieved through advance planning for maintenance.
- EHS condition improves at work place by installation of automatic mechanical screen, chlorine leakage detection system, fire detection system, CCTV system, etc.
- Customize Management Information System (MIS) Report can be generated.
## OUTCOMES

### SERVICE LEVEL BENCHMARKS

<table>
<thead>
<tr>
<th>Sewerage Indicator</th>
<th>Benchmark</th>
<th>Achievement FY 2012-13</th>
<th>Target FY 2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage of Toilets</td>
<td>100%</td>
<td>97%</td>
<td>97%</td>
</tr>
<tr>
<td>Coverage of Sewerage network services</td>
<td>100%</td>
<td>90.10%</td>
<td>91.82%</td>
</tr>
<tr>
<td>Collection efficiency of Sewerage network</td>
<td>100%</td>
<td>97.48%</td>
<td>97.75%</td>
</tr>
<tr>
<td>Adequacy of Sewage treatment capacity</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Quality of Sewage treatment</td>
<td>100%</td>
<td>92.28%</td>
<td>96%</td>
</tr>
<tr>
<td>Extent of reuse &amp; recycling of treated Sewage</td>
<td>20%</td>
<td>2.29%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Efficiency in redressal of Customer Complaints</td>
<td>80%</td>
<td>93%</td>
<td>95%</td>
</tr>
<tr>
<td>Extent of cost recovery in Sewage management</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Efficiency in collection of sewerage charges</td>
<td>90%</td>
<td>90%</td>
<td>90%</td>
</tr>
</tbody>
</table>
SOLID WASTE MANAGEMENT
SMC
SCENARIO OF SOLID WASTE MANAGEMENT SYSTEM

The situation of alleged plague after the flood compelled us to take many initiatives related to hygiene of Public at large. Major initiatives taken after the plague are listed as under

• Scraping ; Brushing activities on major and minor route with concept of zero garbage road.
• Privatization of MSW lifting activities along with augmentation of refuse transfer station.
• Paved platform at container spot.
• Cleaning of paved platform with spraying of insecticide.
• Infrastructure development of final disposal site.
• Capacity building of MSW management system.
• Campaign against use of plastic bags with thickness less than 40 microns.
• Complainants Redresel System
ACTIVITIES AT A GLANCE

- Daily collection of over 1400 MT
- Night brushing and scraping on around 200 routes
- Door to door garbage collection from more than 12 lakh households
- Acceptance of Solid waste from adjoining villages/Town of Surat city.
- Centralized Bio medical waste collection and disposal
- 6 Modern transfer stations are operational in different zones
- Sanitary landfill site under utilization
- Waste to Energy project of capacity 1000 TPD under execution in addition to 400 TPD compost plant.
PRIMARY COLLECTION SYSTEM
(Door to Door & Container lifting)

Door to Door Garbage Collection System.
- It was introduced in the year 2004
- Closed body vehicles equipped with VTS to be purchased by operator.
- Payment is made on per M.T. base of MSW brought to Transfer Station with provision of 5% escalation every year.
- Average daily D to D collection is around 55% of total collection.
- Separate agencies are working in different Zones.

Container Lifting System
- Quantity of MSW lifted through container : 450 MT/Day

<table>
<thead>
<tr>
<th></th>
<th>By SMC</th>
<th>By Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of trips</td>
<td>525</td>
<td>65</td>
</tr>
<tr>
<td>No. of dumper</td>
<td>65</td>
<td>5</td>
</tr>
<tr>
<td>% of Waste collected</td>
<td>89 %</td>
<td>11%</td>
</tr>
</tbody>
</table>

- Average waste collection through container is 40% of total collection.
PRIMARY COLLECTION SYSTEM
(Night Brushing - Scraping & Hotel Waste Management)

**Night Scrapping - Brushing**
- Introduced in 1996 and carried out under departmental supervision.
- Major routes > 200
- Area Covered: 5,00,000 Sq.mt.
- Manpower engaged: around 2000 (on daily wages)

**Hotel Kitchen Waste**
- Introduced in 2000
- Hotel kitchen waste is collected and transported by the hotel association
- Total no. of hotels & restaurants- 300
- Vehicles deployed by the hotel association- 25

**“Anudan Scheme” For Urban Dweller Units**
- Minimum Rs. 1200/- per society, Maximum not more than Rs. 4200/- paid by SMC
- Total activity organized by president of housing colonies
- Area considered for grant in aid: 25% of lay out area.
- More than 600 societies
## Modern Concept of Secondary Transportation:

### Refuse Transfer Station - 6 nos.

<table>
<thead>
<tr>
<th>Facility at Transfer Station</th>
<th>All the primary collecting vehicles from Door to Door Garbage collection and sweeping activity reaches to transfer station from where secondary transportation vehicles are loaded for the purpose of transferring it to disposal site.</th>
</tr>
</thead>
</table>
| Concept of Modern transfer station | • Primary collecting vehicles sent to the Elevated Platform through Ramp.  
• Chutes are provided at Elevated Platform to receive the MSW from where it is unloaded by primary collection vehicles.  
• Secondary transport vehicle is kept underneath the chutes.  
• MSW unloaded from primary collection vehicles is transferred into the closed container provided with compactor system.  
• The chute portion of transfer station is covered on the top with FRP sheet and whole structure is kept closed with concrete louvered blocks.  
• Transportation of container is carried out on Hook lifting vehicles.  
• Containers are fully closed with leak proof door opening system |
MORDEN CONCEPT OF SECONDARY TRANSPORTATION: Refuse Transfer Station

Results Achieved
• MSW received through closed vehicles are dropped to closed containers without secondary handling.
• Covered leak proof container prevents spillage of garbage on the road.
• No foul Smell, as transfer station is semi-closed and transport containers are fully closed.
• No MSW storage, permanently or temporary, at transfer station as it is directly transferred to containers without secondary handling.
• Prevention of Animal entry, flies nuisance
• Creates hygienic conditions in surrounding area

Operational Methodology
• Civil work of transfer station facilitated by municipal corporation
• Investment for machineries, equipments and vehicles to be born by operator
• Two separate agency have been entrusted work each for 3 transfer station
• Concession period for BOO contract is 10 year
• Provision for price escalation @ 5%
• To safeguard interest of operator clause of min guaranteed quantity.
TREATMENT OF MSW - OPTION AVAILABLE

- **Physical Separation**
  - Metal Recovery
  - E waste management
  - Glass recovery
  - Paper recycling

- **Traditional treatment**
  - Composting
  - RDF

- **Advance Thermal Destruction**
  - Pyrolysis
  - Plasma Gasification
  - Incineration
  - Plastic to fuel

- Landfill site
OVERVIEW OF MSW TREATMENT, SMC

MSW Waste Collection, 1400 MT/day

Compost and RDF Plant
400 TPD (Operational)

Waste to Energy plant
1000 TPD (Under Execution)

Landfill site
(Present: 750+80 TPD)
(Target: 250 TPD, only Inert)
MSW TREATMENT

Compost and RDF plant (Operational)

- Surat has opted for multiple waste processing technology for treatment of MSW.
- Segregation of incoming heterogeneous waste.
- Converting in to compost & RDF pallets.
- RDF on burring will emit less quantity of NOX, SOX, CO & CO2 as compared to coal.
- Opted for BOOT base with concession period of 30 yrs.
- Return to SMC in form of lease rent.
- All the permissions, NOC, Consent to follow up the prevailing Rules and regulations is with the agency.
WASTE TO ENERGY: 1000 TPD  
(Under Execution)

Salient Features:
- Total Waste to be treated per day: 1000 TPD
- Total Concession Period: 25 years
- Technology: Pyrolysis (Concorde Blue reactor)
- Net Electric Power generation (Mwe): 13
- Royalty to be paid to SMC: Rs. 30/Tonne (for first year) (with 5.24 % increment every year)

Advantage:
- Completely sealed storage unit
- No smell
- No Oxidation/ Burning of waste
- Complete leachate control by RO system
- Safe Disposal of Plastic including PVC
- No Air Pollution only phase change from Solid to Gas
- Clean green hydrogen rich gas from waste for power production
- Least amount of space required for system
- Minimal rejects to landfill - Increases its life.
Municipal solid waste (MSW) collected from various transfer stations is disposed to Final disposal site located at Khajod.

- The area of Final disposal site is about 200 hectares.
- Sanitary landfill site of 1.25 lac cumts available for receiving inert residues.
- Sanitary landfill site with 6.25 lac cmt capacity under construction at same site.
CENTRALIZED BIOMEDICAL WASTE COLLECTION, TREATMENT & DISPOSAL FACILITY

- BOOT Contract
- Introduced in Jan 2003
- Land (4000 sq. mt.) provided by SMC at token rent
- Facility to be in strict adherence to BMW (M & H) Rules.
- Collection of waste – 4000 Kg./Day
- Capacity of plant 6500 kg / Day
- Population: 44 Lacs
- Hospitals – 723
- Beds – 5780
- General dispensaries 1954
- Pathological laboratories-220
- Others – 291
- Collection Centres – 31
Installation of Centralized Bio-medical Waste Treatment Facility on BOOT Base – INDIA

was selected as a Best Practice by an International Independent Jury for the Dubai International Award for Best Practices in the year 2006 for its outstanding contribution towards improving the living environment.
INNOVATIONS / IMPROVISATIONS

- Computer reports for effective monitoring & evaluation
- Wireless and mobile phone facility for communication
- Delegation of financial and administrative powers
- Complaint Redresel System
- Automated complaint lodging and monitoring system
- Cradle type dust-bin for pedestrian
- Zero-garbage road system
- Retired sweepers engaged for maintenance of public urinals and toilets.
## OUTCOMES

### SERVICE LEVEL BENCHMARKS

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Benchmark</th>
<th>Achievement FY 2012-13</th>
<th>Target FY 2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household level Coverage of SWM Service</td>
<td>100%</td>
<td>92.18 %</td>
<td>95 %</td>
</tr>
<tr>
<td>Efficiency of Collection of MSW</td>
<td>100%</td>
<td>86.53%</td>
<td>92%</td>
</tr>
<tr>
<td>Extent of Segregation of MSW</td>
<td>100%</td>
<td>11.57%</td>
<td>17%</td>
</tr>
<tr>
<td>Extent of MSW recovered</td>
<td>80%</td>
<td>22.16%</td>
<td>32%</td>
</tr>
<tr>
<td>Extent of Cost recovery in SWM Service</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Efficiency in Collection of SWM charges</td>
<td>90%</td>
<td>90%</td>
<td>90%</td>
</tr>
</tbody>
</table>
FINANCIAL SUSTAINABILITY

- Infrastructure for liquid and solid waste management has been strengthened with financial grant under JnNURM scheme.
- Reforms have been implemented for cost recovery as per JnNURM guideline.
- User charges structure has been accepted by the public as well as elected wings.
- Recovery of O&M cost is being met from user charges since year 2008-09.
- User charges for Sewerage: @ 50% of the Water Charges

<table>
<thead>
<tr>
<th>Water supply, Sewerage and Solid waste management</th>
<th>User charges (Rs. in Crore)</th>
<th>O&amp;M Exp (Rs. in Crore)</th>
<th>Cost Recovery (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>271.25</td>
<td>273.44</td>
<td>99.20%</td>
</tr>
</tbody>
</table>
OUT COME ASSESSMENT

Independent Impact assessment shows that

- Improved and efficient Liquid and Solid waste management system
- Improvement in Public Health
- Reduction in water borne diseases
- Increase in Trust and Good relationship with public
- Increase in user charges recovery
LOOKING AHEAD-
LIQUID & SOLID WASTE MANAGEMENT

• 100 % Coverage of Sewerage network including newly added area by Dec-2014.
• Waste Water Recycling Plant- Towards Zero Discharge
• Segregation of waste at source.
• Centralized monitoring system through SCADA in SWM
• Energy generation from MSW.
• Minimizing utilization of Landfill Sites.
• Solar based power plant for closed landfill site.
• Carbon management system to obtain carbon credit in Liquid and Solid waste sectors.
Surat, ...
...... future global city
...... GREEN CITY
...... CLEAN CITY
...... VIBRANT CITY
...... SAFE CITY
...... CULTURED CITY
...... PROSPEROUS CITY