

**DRAFT ACTION PLAN FOR  
CONTROL OF AIR POLLUTION IN  
NON-ATTAINMENT CITIES OF MAHARASHTRA  
ULHASNAGAR**

for



**Maharashtra Pollution Control Board**

by

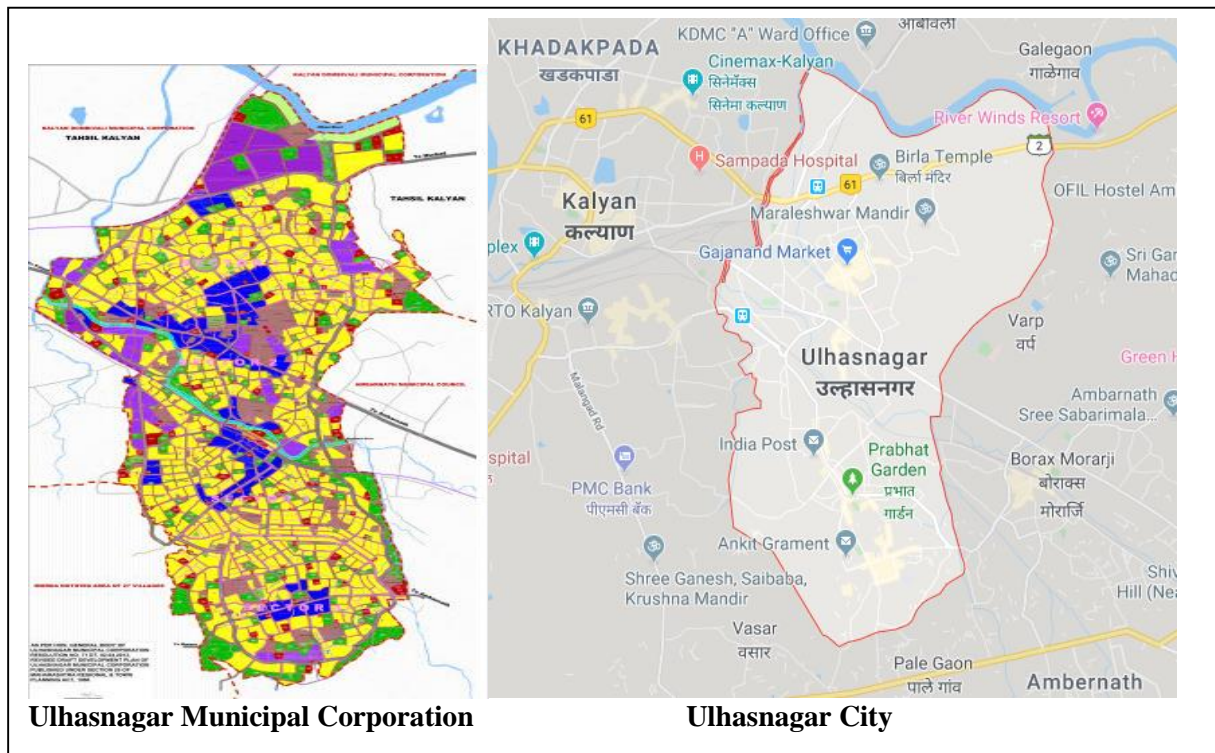


**CSIR- National Environmental Engineering Research Institute**

**January, 2020**

## DRAFT ACTION PLAN FOR ULHASNAGAR CITY

Ulhasnagar is a municipal town on the route of Bombay-Pune Central Railway province. Ulhasnagar, a colony of migrants in the aftermath of Partition, is 43 years old. Situated 58 Kms from Mumbai, the once-barren land has developed into a rich town of Thane district. Originally, known as Kalyan Military transit camp, Ulhasnagar was set up especially to accommodate 6,000 soldiers and 30,000 others during World War II. Sindhis, in particular, began life a new in the new land.



On August 8, 1949 the first and last Governor-General of India, C. Rajagopalachari, laid the foundation stone. The traditionally backward agricultural tracts and marshy lands are now reverberating with a growing industrial sector. The towns in this region display a developed stage of urbanization comparable to any other industrial townships in India. One can reach Ulhasnagar by road or railway. Ulhasnagar railway station is on the Central Line of the Mumbai Suburban Railway. One can reach Ulhasnagar by alighting at either of Kalyan and Shahad Station which are near camp 1 and 2 or Ulhasnagar and Vithalwadi Railway Stations which are close to 3 and 4 or Ulhasnagar and Ambarnath Railway Stations are near to camp 4 and 5.

As per 2011 Census, Ulhasnagar had a population of 506,937. Ulhasnagar is the 22<sup>nd</sup> biggest city in Maharashtra. Males constituted 53% (270,373) of the population and females 47% (236,564).

Population Density is around 434.2. Among minority languages, Sindhi is spoken by 34.47% of the population and Marathi by 19.63%. Due to the large Sindhi population, the area has earned the moniker USA referring to the Ulhasnagar Sindhi Association. The town covers an area of 13 square kilometers and is divided into 285 blocks. Ward # 2, 6, 15, 20, 21 and 22 are densely populated, having Gross density of 600 persons per hectare and above. This ward has structures having FSI up to 4 and above. Slum pockets also contribute in the undesirable density in these wards. Wards 10,11,12 and 13 are the ones with least density with density less than 300 persons per hectare. City has Declared Slums household in numbers as 12632 and Undeclared Slums are 14786.

The city is mainly divided in camp areas viz.

- Ulhasnagar camp-1 and it is located on the west side of railway stations. The main center here is a market with famous landmarks like Goal maidan where many people visit from nearby areas like Kalyan, Ambernath, Badalpur, Dombivili, Thane, Titvala etc. for shopping.
- Ulhasnagar Camp-2. It is a market with popular landmarks like Gajanan Market and it is famous for clothing, electrical and electronics etc. Nehru Chowk is the main centre here.
- Ulhasnagar Camp-3. It is mainly a market and it is located on the west side of railway stations. The famous landmarks here are furniture bazaar, RKT College, Sapna theatre, Ashok-Anil Multiplex etc. it is mainly a furniture and electronics market.
- Ulhasnagar Camp-5, is located on the eastern side of railway stations and it is mainly a residential area. You can see several jean making small scale industries here. Jhulelal Mandir, Swami Sarvanand School, Swami Shantiprakash Chowk, Nethaji Garden, etc. are the famous landmarks here. This locality is heavily populated with Sindhi community people.

The Ulhasnagar lies on 20 m above sea level, the climate here is tropical. There is significant rainfall during the monsoon months of the year. The average annual temperature in Ulhasnagar is 27.0°C. Precipitation here averages 2958 mm.

The total length of existing Roads and Streets in the town measures 352 Kilometers. Total Length of Roads is 126.20 Kms. About 28% of all the roads are already concretized and about 66% of the roads are asphalt roads. Length of constructed roads of different types viz. Cement Concrete Road -34.753 (28%), Bitumen 83.532 (66%), WBM - 6.185 (5%), Other 1.73 (1%).

The city is connected to nearby areas by State Highway network. The city is catered by three railway stations. Thus Adequate Rail & External Road connectivity. Urban transportation is mainly dependent on Intermediate Public Transport system such as Auto rickshaws.

Out of 126 Kms only 18.1 Kms (i.e,14%) of roads have been developed as per the DP width. 14 Kms of roads are required to be developed for 100 ft ROW and at present no road has been developed for 100 ft. About 97 Kms of roads to be developed to desired DP widths. Parking demand for vehicular traffic is quite high due to high FSI and high density in residential areas. Current level of parking arrangement is poor, as both 2 and 4 wheelers on these main roads do kerb side parking.

There are no facilities like truck/ tempo terminals against the high demand.

It is a centre for the production of rayon silk, dyes, ready-made garments, electrical / electronic appliances and confectionaries. Rayon and chemical industries are located here along the banks of the Ulhas, above a small weir, making full use of the water available in the river throughout the year.

As per assessment daily generation of solid waste amounts to 358.53 tonnes per day for the 2016. No segregation of waste done at any level. Existing landfill site at Shahad and Proposed site of 25 acres is at Kamba Village 7 Kms away. The corporation is identifying and acquiring the land for landfill site i.e. 45 acres. It's need to be develop and design with proper collection and transportation system integrating the standard requirements of the SWM Rule 2000. For collection and transport the private agency are handling at present.

The city of Ulhasnagar has around 10,000 buildings. As per Ulhasnagar Municipal Corporation almost 95 per cent of these buildings are illegal; in the past few months, around 40 to 50 construction projects have got permission. The day by day migration from Mumbai and Thane region people are shifting towards Ulhasnagar city due to property prices, which lead to overburden to the city. The city is having almost 60-80% built area, and expanding vertical (tall building). The building are mostly 2 to 3 stored, based on these structure other small shops/commercial market and hutments are increased. Multiple small scale business, hotels restaurants, dabhhas, open eat-outs are located near the market places. As per Census data 2011 the number and percentage of Households by their type of fuel used for cooking in Ulhasnagar Municipal Corporation Area is given below :

Sub-District Ulhasnagar 2751704169	Total Number of Households	Firewood	Crop Residue	Cowdung Cake	Coal/ Lignite/ Charcoal	Kerosene
<b>Total Urban</b>	110,234	3,144 (2.85%)	452 (0.41%)	144 (0.13%)	110 (0.1%)	24,694 (22.4%)

Sub-District Ulhasnagar 2751704169	LPG/ PNG	Electricity	Bio-gas	Any other	No Cooking
<b>Total Urban</b>	80,709 (73.22%)	17 (0.02%)	247 (0.22%)	62 (0.06%)	655 (0.59%)

\* Thane, District Census Handbook, 2011

As city expanding of its full extent, infrastructure facilities need to be developed urgently. The Municipal Corporation with MMRDA in MMR region has worked out the Development Plan for Ulhasnagar City. There are some proposed developments will take place and Draft proposals are submitted to MMRDA which includes :

- To develop all the roads under the development plan to the full width. Existing four lane roads to be developed to Cement Concrete pavement and other two lane roads should be developed by Bitumen pavement for the widening portion.
- Station Area Improvement. Existing shops and other commercial activities to be resettled. Land of 800 m length and 150 m on either side of the railway station has been considered. The model for the development can be on PPP route, wherein the land will become the equity from the Government.
- Construction of ROB near Ulhas nagar and Vithalwadi station has been considered for the development. The FOB for Ulhasnagar has been proposed which will give direct access to commuters directly to the Railway station.
- Parking Development -3.35Ha of area has been proposed for the parking development and it is recommended that all the reserved parking spaces should be developed immediately.
- Truck terminus of about 5 ha has been proposed near Vithalwadi, which can become a hub of goods transport movement and parking etc .
- Multi-storied parking can be encouraged by granting necessary TDR on their plots.
- Integrated Road Development Project (IRDP II) includes :  
Forty-three (43) projects comprising 35+4 roads, 2 bridges, 1 culvert and 1 entrance gate, have been initiated. Most projects have been completed (28) and in progress (14), some are hampered for want of removal of encroachments. The completion of these balance projects should be part of the CDP of Ulhasnagar.
- Public Transport System -To initiate the proposals of running public transport services through Private sector participation basis. To establish the viability of the system, this will require detailed Traffic and Transportation study.
- Developing Waldhuni & Khemani Nalah - Bedding and Soling: which includes laying of 15-20 cm of M15 concrete along the beds and base. Retaining Wall to be designed is 1-11/2 below bed having a footing of 4-5 mts and total height 5 mts above bed. Other 66 Nallahs identified to be upgraded and construction for retaining wall.

The Ulhasnagar cities vehicles are mostly registered in Thane and Kalyan Dombivali region, and most of them plying in city region. The registered vehicles data for 2016-17 is given below :

**Registered Vehicles at Thane & Kalyan Dombivali -District**

Sr.	Category	Thane	Kalyan Dombivali
1	Motor Cycles	117585	72479
2	Scooters	665743	4623
3	Mopeds	10345	492
	<b>TWO WHEELERS</b>	<b>793673</b>	<b>77594</b>
4	Cars	215120	19498
5	Jeeps	12550	0
6	St. Wagons	1045	0
7(a)	Taxi Meter Fitted	4230	324
7(b)	Taxi Tourist Cab	13142	1740
8	AUTO - RICKSHAWS	44836	2769
9	Stage Carriages	1285	32
10	Contract Carriages	276	325
11	School Buses	248	103
12	Pvt.Serv.Veh.	934	11
13	Ambulances	1970	72
14	Arti. & Multi.Veh.	27525	35
15	Trucks & Lorries	13459	696
16	Tankers	28782	543
17	Del. Van (4 Wh.)	12373	1341
18	Del. Van (3 wh.)	725	3608
19	Tractors	1515	402
20	Trailers	266	10
21	Others	853	240
	<b>Total</b>	<b>1174807</b>	<b>109343</b>
	<b>Census Population 2011</b>	1818872	1246381
	<b>Vehicles per 1000 Person</b>	<b>646</b>	<b>88</b>

\* Motor Transport Statistics of Maharashtra 2016 -17

As per registered vehicle data percentage contribution of registered vehicles is around 68% (in Thane) to 74% (in Kalyan Dombivali) for 2 wheelers, 19% and 18% of Cars/Jeeps. 3% and 2% of 3 wheelers. Truck and Stage Carriers are around 3% in Thane and 1% in Kalayan Dombivali region, Taxi has also very less percentage i.e. 1%. As per census data in Ulhasnagar Municipal Corporation area, people having 13,733 numbers of Bicycle; 29,828 numbers Scooters/ Motor Cycles and 6,132 numbers for Car/Jeep/ Vans as their property.

Based on the city profile it is understood that city having multiple problems like overcrowded traffic junctions, lack of public transport, huge construction activities of road and buildings, resuspensions of dust, due to market place lot of movements of people and transport vehicles from nearby place as well as pollution from domestic sector like fuel is burning, open eatout & hotels, and small scale industries.

The MPCB is regularly monitoring this region, having its two stations at Smt. CHM College Campus and Powai Chowk (Rural and other areas). The yearly monitoring data of the pollutants for 2018 and 2019 is presented below :

**A) Data for Monthly Average Reading Recorded at Smt. CHM College Campus**

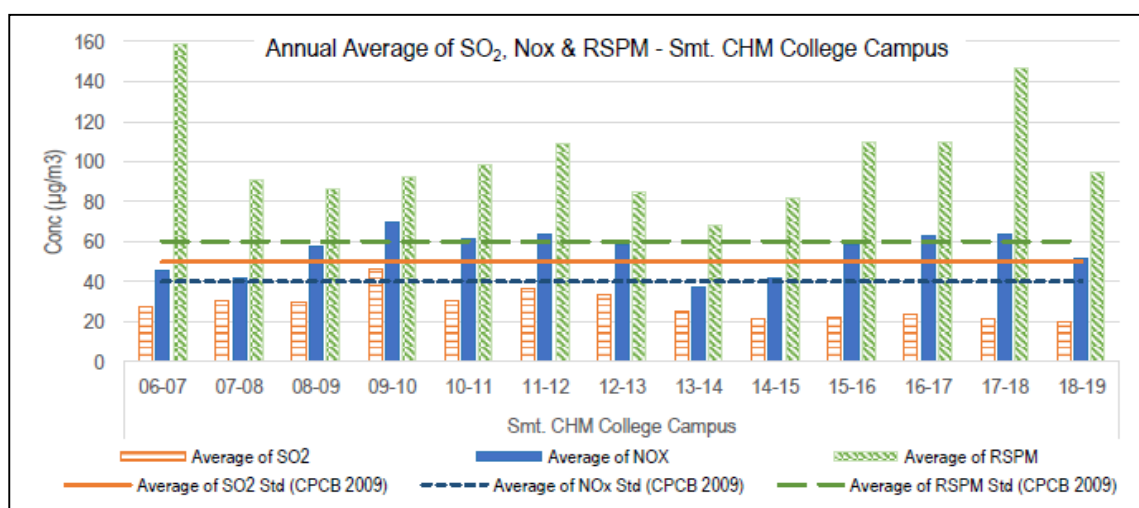
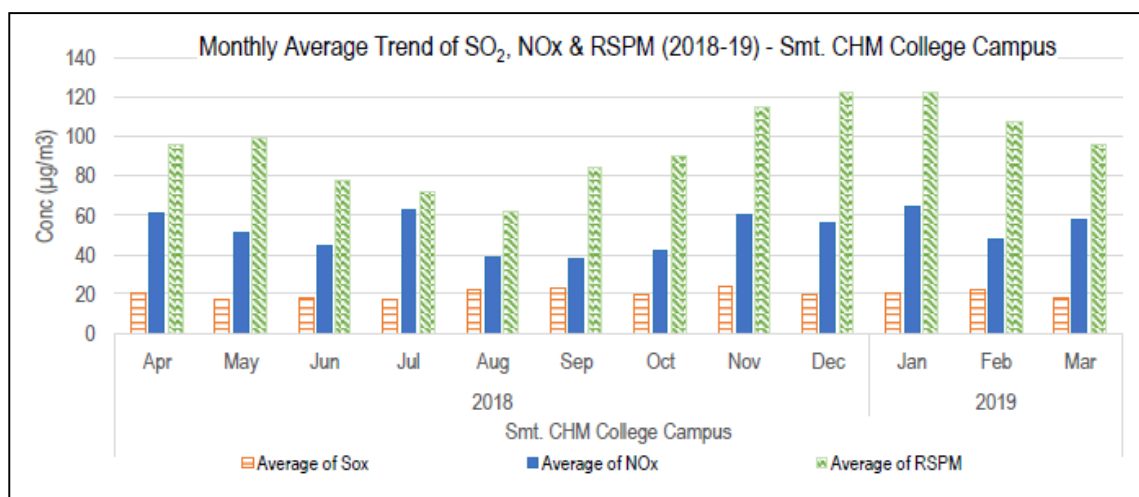
Station Name	Year	Month	Average of SO <sub>2</sub> (µg/m <sup>3</sup> )	Average of NO <sub>x</sub> (µg/m <sup>3</sup> )	Average of RSPM(µg/m <sup>3</sup> )
Smt. CHM College Campus	2018	Apr	21	61	96
		May	17	51	99
		Jun	18	44	78
		Jul	17	63	72
		Aug	22	38	62
		Sep	23	37	84
		Oct	19	42	90
		Nov	24	60	115
		Dec	20	56	122
	2019	Jan	20	65	122
		Feb	22	48	107
		Mar	18	58	96

Note: Monthly graphs do not have any CPCB Standard<sup>54</sup>

**Data for Annual average trend of SO<sub>2</sub>, NO<sub>x</sub>, and RSPM at Terrace of SRO – Smt. CHM College Campus**

Station Name	Year	Average of SO <sub>2</sub> (µg/m <sup>3</sup> )	Average of NO <sub>x</sub> (µg/m <sup>3</sup> )	Average of RSPM(µg/m <sup>3</sup> )
<b>Annual Permissible Limit (CPCB)</b>		<b>50</b>	<b>40</b>	<b>60</b>
Smt. CHM College Campus	06-07	28	46	159
	07-08	31	42	90
	08-09	30	57	87
	09-10	46	70	92
	10-11	30	61	99
	11-12	37	64	109
	12-13	34	58	85
	13-14	25	37	68
	14-15	22	42	82
	15-16	22	59	109
	16-17	23	62	110
	17-18	21	63	147
18-19	20	52	95	

- Air Quality Status of Maharashtra, MPCB 2018-19



**B) Data for Monthly Average Reading Recorded at Powai Chowk**

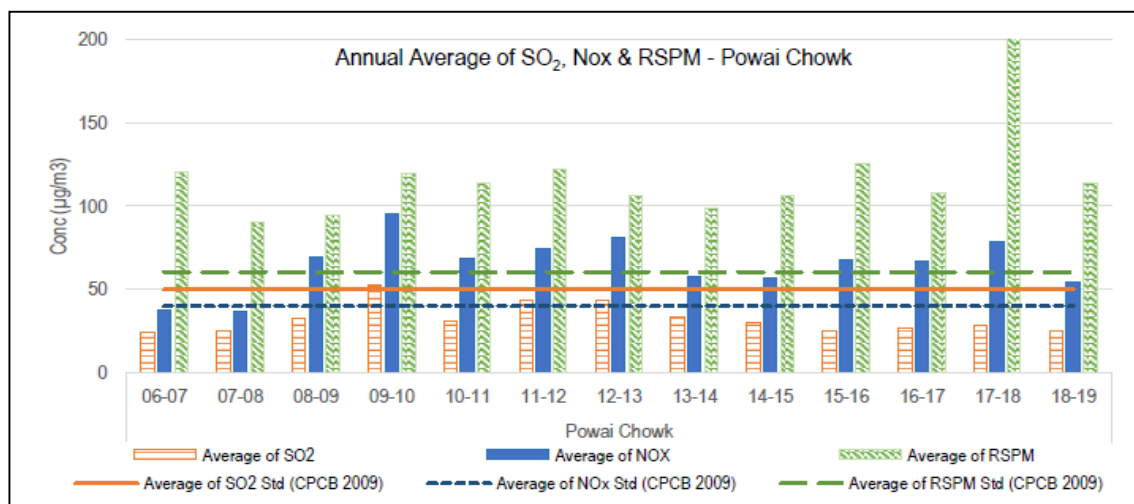
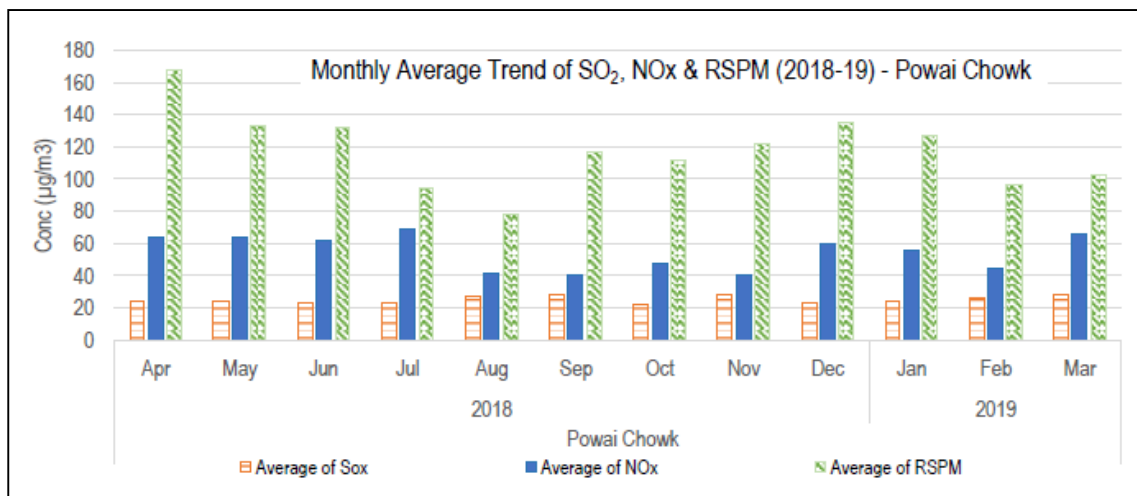
Station Name	Year	Month	Average of SO <sub>2</sub> (µg/m <sup>3</sup> )	Average of NO <sub>x</sub> (µg/m <sup>3</sup> )	Average of RSPM(µg/m <sup>3</sup> )
Powai Chowk	2018	Apr	24	64	168
		May	24	64	133
		Jun	24	62	132
		Jul	23	69	94
		Aug	27	42	78
		Sep	28	41	117
		Oct	22	48	112
		Nov	28	40	122
		Dec	24	60	135
	2019	Jan	24	56	127
		Feb	26	44	97
		Mar	28	66	103

Note: Monthly graphs do not have any CPCB Standard<sup>54</sup>



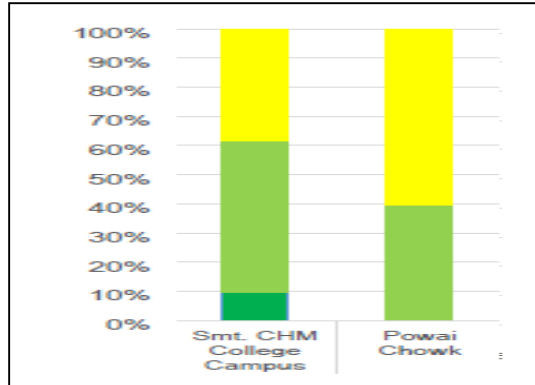
### Data for Annual average trend of SO<sub>2</sub>, NO<sub>x</sub>, and RSPM at Powai Chowk

Station Name	Year	Average of SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	Average of NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ )	Average of RSPM( $\mu\text{g}/\text{m}^3$ )
<b>Annual Permissible Limit (CPCB)</b>		<b>50</b>	<b>40</b>	<b>60</b>
<b>Powai Chowk</b>	06-07	24	38	121
	07-08	25	37	91
	08-09	33	69	95
	09-10	53	96	119
	10-11	31	69	114
	11-12	43	74	122
	12-13	43	81	106
	13-14	33	58	99
	14-15	30	57	106
	15-16	25	67	126
	16-17	27	67	108
	17-18	28	78	240
18-19	25	54	114	



**Percentage Exceedance of pollutants at Ulhasnagar City**

Station Name	Total Observations	Exceedence			% Exceedence		
		SO <sub>x</sub>	NO <sub>x</sub>	RSPM	SO <sub>x</sub>	NO <sub>x</sub>	RSPM
<b>Smt. CHM College Campus</b>	95	0	73	80	0	81	85
<b>Powai Chowk</b>	91	0	57	61	0	80	97



Percentage Occurrence for Classes of AQI Across Ulhasnagar in Maharashtra 2018-19

Among all the criteria air pollutants, particulate matter has emerged as the most critical pollutant exceeding almost 85-97% of the NAAQM CPCB standard. Similarly NO<sub>x</sub> is also exceeding about 70-81% of the times.

The proposed action plan in the following section is based on the secondary data and preliminary visit to the city. This will be further modified with the inputs from findings of the source apportionment study.

### Short Term Action Plan for Ulhasnagar City

Source Group	Technical Control option	Expected Reduction and Impacts	Technical Feasibility	Implementation Period (Short/Mid/Long-term)	Responsible agencies	Any Other Information
<b>Vehicular Sector</b>	Provide Good Public Transport	High	Feasible Req. Cost & Infrastructure Road & Bus Depot Space etc.	Short-Mid (2 Yr.)	Ulhasnagar Municipal Corporation, RTO, PWD	City like Ulhasnagar having many markets places Gajanan Market of cloths, furniture market where many people coming from nearby places creating traffic zones, where corporation should provide public transport. A study can be initiated for analysis of path direction where more number of passengers travel. On that route fleets can be initiated.
	Petrol /Diesel /Autorickshaws to shift on CNG/LPG	High	Feasible	Long Term (1 to 3Yrs.)	MoNG, RTO, UMC	Encouraged for shifting of fuel through administrative orders and tax exemption. Incentive for new owners to buy CNG/ LPG vehicles. Developed infrastructure for easy availability of fuel station for CNG refueling and availability of kits for such conversion to the older vehicles
	Promote Electric/Hybrid Vehicles	High	Feasible	Short Term (1 to 2 Yrs.)	UMC, Auto Firms NGOs,	The number of E-rickshaw in the city doesn't have the strength for intermediate point transfer of population. Hybrid vehicle particularly efficient for city traffic where there are frequent stops and idling periods also reduce noise emissions in comparison to conventional engine vehicles. Hybrid vehicles can reduce air emissions of smog-forming pollutants by up to 90% and cut carbon dioxide emissions in half .

**Short Term Action Plan for Ulhasnagar City (Contd..)**

Source Group	Technical Control option	Expected Reduction and Impacts	Technical Feasibility	Implementation Period (Short/Mid/ Long-term)	Responsible agencies	Any Other Information
<b>Vehicular Sector</b>	Regular check of adulteration of fuel	Moderate	Feasible	Short Term (1 to 2 Yrs.)	City Traffic cell/ RTO UMC	Many autorickshaws use oil and kerosene with petrol. Strict action must be taken against violation.
	Regular check of PUCs of vehicles and installation of Remote Sensor based PUC system	High	Feasible	Short Term (1 2 Yr.)	City Traffic cell/ RTO, UMC	Strict compliance. Only some authorized PUC in the city, number should increase.
	Retrofitment of Diesel Oxidation Catalyst (DOC) and Diesel Particulate Filter in HDDV	Moderate	Feasible	Long Term Retrofitting devices- 50% conversion In 2Yrs for HDDV in city new registered vehicles	Transport Commissioner Office, UMC	A pilot study is required to test the need and efficacy of emission control device and retrofitting it in the older vehicles. Impose restriction of truck movement in the city for plying without retrofitment to HDDV vehicles (base on age and engine type). Tighter diesel fuel standards particularly for Sulphur to bring down its level up to 50 ppm. Differential taxation to those with and without after treatment devices
	Banning of 15 year Old Commercial Vehicle	High / Moderate	Feasible	Short Term 1 Yr. Initially 50% banning Encouragement by provision of incentives in form of scrap value.	Transport Commissioner Office, UMC	All vehicles should go through inspection and certification every two years. Incentive for an owner to phase out his vehicle after 15 years given in the form of low registration cost or direct subsidy. Corporation and metropolitan authority should demark designated places for scrapped vehicles as such there is no provision in the city.

**Short Term Action Plan for Ulhasnagar City (Contd..)**

Source Group	Technical Control option	Expected Reduction and Impacts	Technical Feasibility	Implementation Period (Short/Mid/ Long-term)	Responsible agencies)	Any Other Information
<b>Vehicular Sector</b>	Introduce Traffic Signal & Synchronization of traffic signals Sensor Based - Real time tracking	High	Feasible	Short Term 1 Yr. Major & minor roads, excluding feeder roads (or about 50% of the all arterial roads)	Transport Commissioner Office, UMC	Pre-feasibility study should undertake for some hotspots. Detail study should be worked out on signaling network with sensor based monitoring and apply fuzzy logic, mathematical model gives the real time picture.
	Inspection and Maintenance	High / Moderate	Feasible	Short Term 1 to 2 Yrs. New I&M regulations (Initially 60% population of vehicles of a RTO region)	Transport Commissioner Office, UMC	The test design should have the basis of engine and overall vehicles fitness (road worthiness).The Vahan-nagari area should be developed for I&M which is equipped with state-of-the-art testing set-up for all the types of emission as well as fitness testing. Strict compliance for I&M programs that are difficult to cheat; computerized data capture of control of tests, strict enforcement with socially acceptable failure rates and penalties
	Regulating Road Site Parking	High	Feasible	Road site parking to be reduced by 80%  (On street parking spaces guidelines as per IRC: SP: 12:2015.)	Transport Commissioner Office, UMC	Parking on roads should be regulated along with a rule to allow purchase of vehicles only if parking place is available. All road side shop, commercial premises, busy lanes are parking. Their vehicles indiscriminately near the approach movement. Municipal corporation should define designated space in the localities and develop elevated pay and park zones. Higher parking fee for longer period of time. The commercial vehicles for good transport should not be allowed in peak hours

**Short Term Action Plan for Ulhasnagar City (Contd..)**

Source Group	Technical Control option	Expected Reduction and Impacts	Technical Feasibility	Implementation Period (Short/Mid/ Long-term)	Responsible agencies)	Any Other Information
<b>Vehicular Sector</b>	Intermediate Road Transport & Traffic Control	High/ Moderate	Feasible	Interlinkage & accessibility of road to Station, Residential Blocks & Offices. Identify 30% area	Transport Commissioner Office, UMC	Prepare plan for widening of road and improvement of infrastructure for decongestion zones. Interlinkage of Road should be designed as per traffic flow in peak hours. Encouragement of share Auto /Pvt. cars results in reduction of private occupancy of vehicles and generates open space, less congestion with easy traffic flow.
<b>Area Source</b> Paved & Unpaved Road Dust	Pot hole free road Blacktopping of tar and cement roads	High	Feasible	Immediate action require, basically after every monsoon 6 months	Transport Commissioner Office, UMC	UTTIPEC design manual has been recently created by Delhi Development authority for uniform roadside, drains, footpath and related design. The same should be adopted for all future design for roads and pathways. Pavement of road should be made wall to wall, especially the shoulders. Vehicle speed and volume and road condition should frequently monitor by Traffic department, potholes and repair digging activities should be properly managed. Better sweeping management system should be implemented. Use of mechanical sweepers should be initiated for large coverage. Financial incentives to contractors using better technology for road construction.
	Wall to wall road pavement with road widening	High	Feasible	Short Term for Intermediate roads 6 m to 1 Yr. Long Term -2 Yrs. for Bigger roads		
	Mechanical Sweepers for road sweeping	Moderate	Feasible	Short Term – 6 Months		

**Short Term Action Plan for Ulhasnagar City (Contd..)**

Source Group	Technical Control option	Expected Reduction and Impacts	Technical Feasibility	Implementation Period (Short/Mid/Long-term)	Responsible agencies)	Any Other Information
Area Source	Creating Green buffer zone along the road dividers	Moderate	Feasible	Short Term – 6 Months	NGO, RTO, UMC	This can be done in collaboration with local bodies and NGOs. Action control the resuspension of dust in kerb site. Encourage by large industries, CSR funds can be utilized for the same. Treated sewage for road side bioswale system, which will not only keep the kerb-side green but also help in arresting air pollution.
	Major traffic intersections to have water fountains					
	Building Construction	High/Moderate	Feasible	Short Term – 6 M - 1 Yrs. & Continuous process	Builders Association RERA, UMC	Building construction/demolition codes need to be used with specific reference to PM control. Water spraying on the tires of trucks and vehicles at the entry/exit point of construction site. Constructing a water pit at the entry/exit points of the construction site to avoid dispersion of particulate matter through movement of trucks while entering and exiting the site. Appropriate barricading of the under construction site to avoid dispersion of the dust and particulate matter in the ambient air
	Open Burning	Moderate	Feasible	Short Term -6 Months	Ulhasnagar Muni. Corpo.	Penalty charges on open burning, strict vigilance on small scale industries. Proper collection and disposal practices should be adopted on daily basis so that opening burning cases are not reported. Fast track steps for scientific SWM. Small scale industries should be under strict vigilance.

**Short Term Action Plan for Ulhasnagar City (Contd..)**

Source Group	Technical Control option	Expected Reduction and Impacts	Technical Feasibility	Implementation Period (Short/Mid/ Long-term)	Responsible agencies)	Any Other Information
Area Source	Hotel & Bakeries / Open Eatouts / Bakeries	Moderate/ High	Feasible	Short Term -6 Months  75% of Coal used in Dabba, Open-eatouts to replace by LPG	Ulhasnagar Muni. Corpo. Hotel Owner Association	Use of alternate biomass fuel at hotels/ bakeries and open eat outs. Designated areas should be designed for the coal and wood based operations within the premises specially Dhabba. Options of fuel shift LPG/ PNG should be implanted in phase wise with their availability. Restriction and control should be based on license system.
	Crematoria	High	Feasible	Phase wise shifting to 50% Electric – 1 to 2 Yrs. 75% Electric – 2 to 3 Yrs.	Ulhasnagar Muni. Corpo.	Crematoria should be provided with efficient pyres and chimneys with bag filters or cyclones filters. Further, a study involving usage of NG burners in a closed furnace like electrical crematoria may be explored as substitute to existing practices. This will require participation of social organizations for increasing the awareness about need to change from the traditional methods. Concept like Green Crematoria should be explored
	Domestic Cooking Sector	High	Feasible	50% of slums to use LPG/ PNG  70% of non-slum to use LPG/PNG	LPG Cylinder Distributors Ulhasnagar Muni. Corpo.	Increase the infrastructure and availability of LPG/PNG to whole of UMC region. Proper dispensing and easy availability of cylinder to the consumer of slum population should be made. Proper Ventilation should take care of indoor air quality.

**Short Term Action Plan for Ulhasnagar City (Contd..)**



<b>Source Group</b>	<b>Technical Control option</b>	<b>Expected Reduction and Impacts</b>	<b>Technical Feasibility</b>	<b>Implementation Period (Short/Mid/ Long-term)</b>	<b>Responsible agencies)</b>	<b>Any Other Information</b>
<b>Industrial Sector</b>	Installation /up gradation of air pollution control systems in industries	High	Feasible High Cost to Small Scale Industries	Short Term -1 Yr. Months	MPCB, Small Scale Industries & UMC	Regular check for APC efficiency QA/AC and Stack emission dispersion. Many small scale industries emit their pollution without control options, it should be strictly banned. Vigilance system should be developed.
	Shift to cleaner fuels – FO, LSHS, HSD to LDO Coal & Others to NG	High	Feasible High Cost to Small Scale Industries	Short Term -1 Yr. Months	MPCB, Mahanagar Gas Small Scale Industries & UMC	Shift to cleaner fuels from FO and Coal to Natural Gas (NG) as per the availability from M/s. Mahanagar Gas P.Ltd. Feasibility of changing combustion technology to facilitate usage of gaseous fuels may be undertaken with financial incentives.
<b>Others</b>	Installation of display screens for AAQ of the city	Low	Feasible	Short Term -6 Months	UMC, MPCB, NGOs	Awareness among common people for AAQ of the city. When city survey was done, suggestions from public were, to let people know what the AAQ of the city is. Dissemination of information through sign boards & through NGOs. Others initiatives should be taken by UMC like plastic bans, through waste in Nalla and open burning etc.