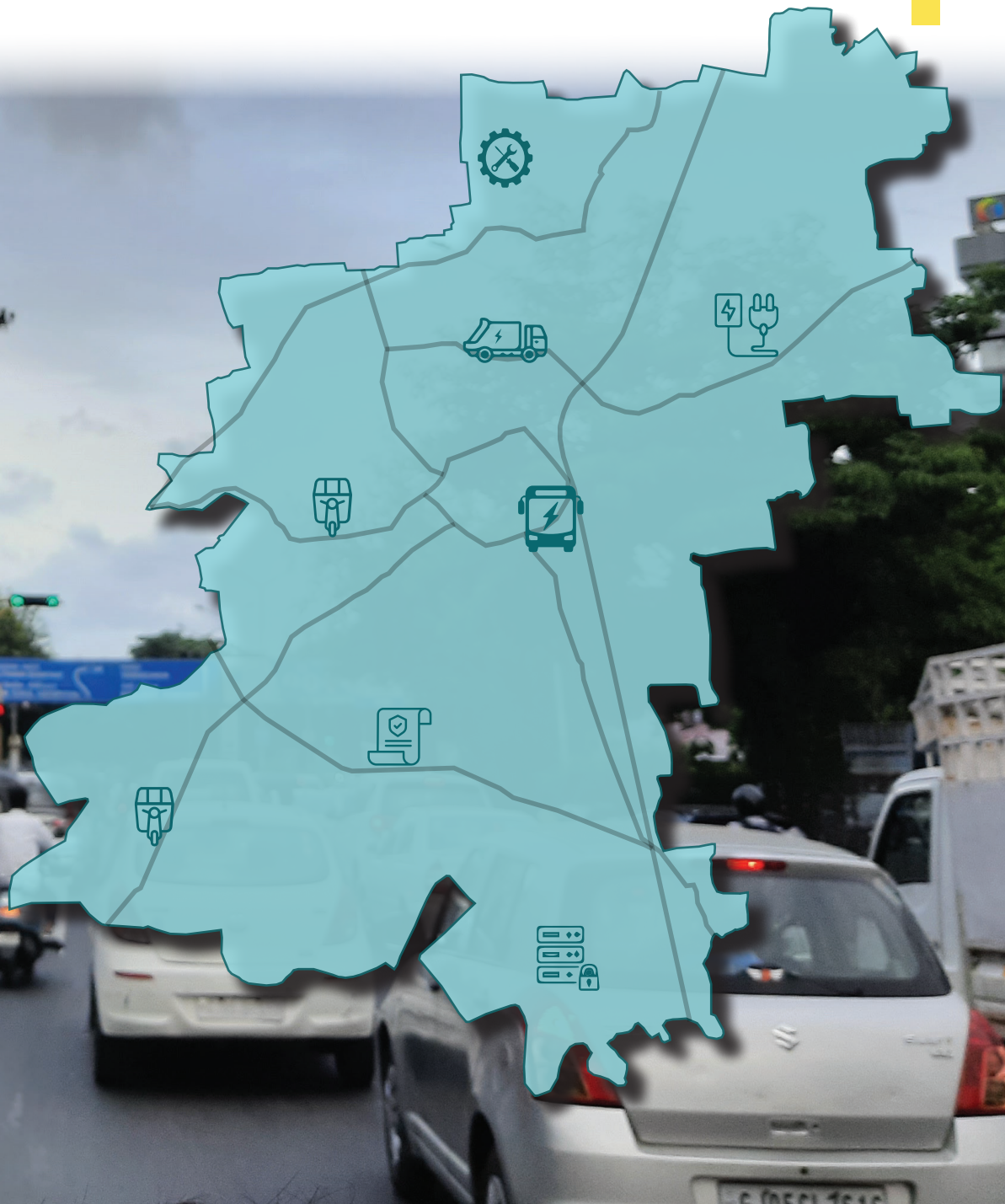




E-mobility City Action Plan

Surat City



Acknowledgement: ICLEI South Asia would like to express its sincere gratitude to the officials from Surat Municipal Corporation (SMC), Torrent Power, Surat SitiLink (SSL), Surat Urban Development Authority (SUDA), RTO Surat, and OEMs in Surat for their insights and guidance. The inputs from the Advisory Group members were crucial in finalizing the document.

Author: ICLEI South Asia: Ashish Rao Ghorpade, Vijay Saini, Nandini Shandilya

Contributors: ps Collective: Dr. Saket Sarraf, Sameeha Sheth, Amrutha Balan

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Contact

ICLEI – Local Governments for Sustainability, South Asia

C-3 Lower Ground Floor, Green Park Extension, New Delhi – 110016, India Tel: +91–11–4974 7200

Email: iclei-southasia@iclei.org

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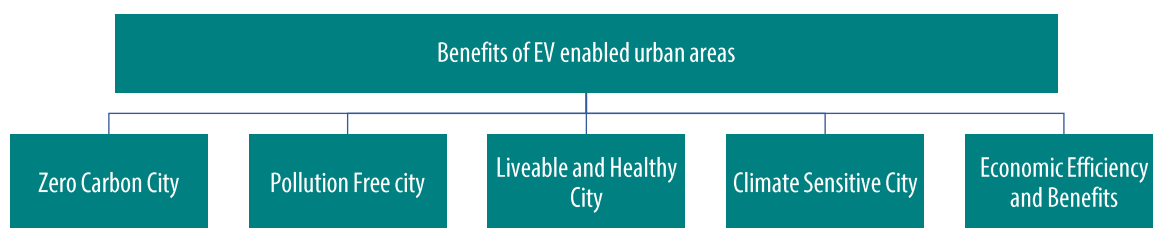
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1. Background

Climate change is a common phenomenon across the globe. United Nation’s survey suggests that cities are a key contributor to climate change, as urban activities are major sources of greenhouse gas emissions. Estimates suggest that cities are responsible for 75 percent of global CO₂ emissions and account for more than 70 percent of energy-related carbon dioxide (CO₂) emissions globally with transport and buildings being among the largest contributors.

India has also committed to the national target to reduce the carbon footprint by 33-35 percent by 2030 below 2005 levels, increase share of non-fossil fuel-based electricity to 40 percent by 2030 and achieve net zero emissions by 2070. Transport sector being a major consumer of about one third of the crude oil consumed in the country and a major contributor to GHG emissions and air pollution levels, clear set of pathways to decarbonise this sector is required.

Historically, petroleum-based modes of transport have been the only reliable option but with the growing momentum for alternative fuel and vehicle technology electrification of vehicles is also visible. National and state governments are pledging support for EV deployment and charging infrastructure through development of supporting regulatory ecosystem, encouraging local manufacturing, charging infrastructure network development, awareness and capacity building and R&D for improved vehicle technology through EV policy and initiatives like FAME. Electrifying of transport sector along with adequate policy framework and infrastructure is essential to reach the goal of cleaner environment and carbon neutrality.



Further, a robust and accessible public/private charging infrastructure is an essential pre-requisite. In view of the situation, an alternative approach and innovation is a pressing need. Establishing contextual, appropriate and a robust way to regulate and revitalize the sector will impact at city level as well as nationwide.

With the same context, ICLEI South Asia embarked on an initiative to “Support Indian Cities in Taking Leadership on Electric Vehicles (EV)” to aid the cities to identify priority interventions and take necessary steps towards accelerated transition to EVs. This initiative included several interactions and discussions with the city stakeholders during visits to 10 project cities – Coimbatore, Gangtok, Kochi, Lakshadweep, Meerut, Nagpur, Panaji, Rajkot, Shimla and Surat. Consultations with the major stakeholders impacting EV transition in cities included advisory groups, industry experts including the advocacy group, charging infrastructure developers, vehicle technology/OEMs and financial institutions.

Surat has been a forerunner city in transitioning to EVs with the introduction of Surat EV Policy which lays down specific city vision with targets and incentives for charging infrastructure developer as well as for the buyers, initiatives to include EVs in municipal fleet and forming a nodal committee for reviewing and taking decisions related to EVs.

This document has been developed as a part of the above mentioned initiative and aims to provide a guideline to city administration to achieve environmental sustainability by accelerated electric vehicle integration and its infrastructure development with city’s existing vision. It provides a prioritized list of probable solutions and recommendation for EV infrastructure for developed area and future growth of the city. The document highlights strategies that will help Surat to achieve the mentioned below benefits by doing citywide to area-based interventions viz – viz EV vehicle awareness, planning and design guidelines.

2. City Overview

Surat is one of the most dynamic cities in the state of Gujarat. It is also known as ‘The Silk City’, ‘The Diamond City’, ‘The Green City’ and among the cleanest city of India. Surat was a major business hub in history and still continues the tradition as people around the country flock in for business and jobs. Surat is a tier-II city with a population of 44.68 lakhs and an urban population of about 48.05 lakhs. The area under the Municipal Corporation is 326.52 sq. km.



Figure 1: Location map of Surat (left) and pictures of Surat City (right)
 (Source- ICLEI SA)

2.1. Electric vehicle ownership in Surat

The share of EVs in total vehicles registered in the year 2019 was 0.1% which increased to more than 12% in 2022, illustrating the very high adoption of EVs in 2022, especially after the notification of the Surat EV policy in 2021. Two wheelers contribute to almost 75% of the vehicles registered in 2022. The registration trend of EVs vs other vehicles from 2019 to 2022 is as below:

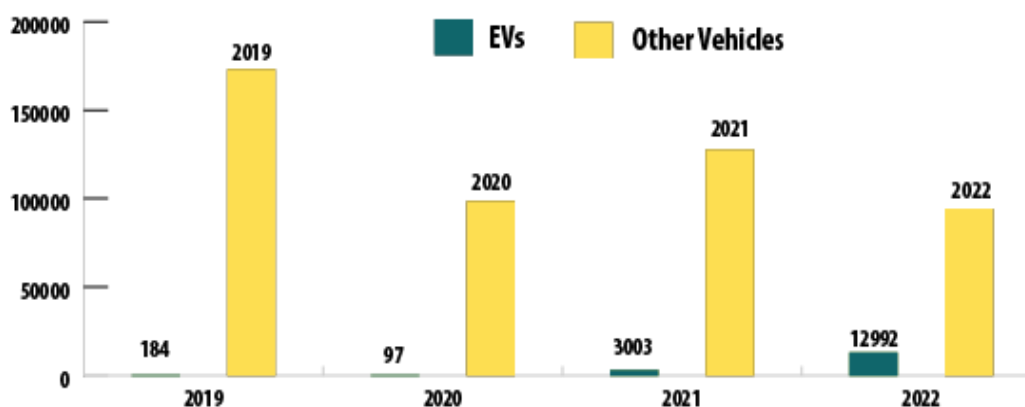


Figure 2: EV ownership in Surat (Information source - VAAHAN Dashboard, accessed on 30th September 2022)

3. Situation Analysis

3.1. Policy Framework to Promote E-Mobility in Surat

Surat Electric Vehicle Policy 2021, is the first city level EV policy which is effective till 30 June 2025. It envisages Surat as a leading EV smart city in the country with an objective to facilitate adoption of atleast 20% EVs of the target in the state EV Policy, promote EV charging infrastructure in the city, mandate adoption of EVs by government offices, promote RE, create awareness, create employment and protect environment. Under the EV Policy, SMC plans to undertake actions in the following area:

- Target of 40300 EVs till the end of policy tenure including 300 e-buses, and to develop 500 public charging stations
- SMC will reimburse 100% of environmental improvement charges for the first 3 years
- Exemption of 100% vehicle tax for EV registered vehicles (reduces to 75%, 50% and 25% by the 4th Year)
- Subsidized rate of electricity for charging EVs.
- Database of public and private EV charging station
- Start up and innovation in the EV sector, information, education, and communication (IEC) activities to create awareness
- SMC will provide limited charging station points on its premises with a phased adoption of EVs
- Benefits to SMC employees shifting to EVs
- EV Policy Managing Committee will be formed within SMC to review and update the policy, decide the locations for charging stations. EV Policy Implementing & Interpretation Committee will be formed to resolve any dispute

3.2. Surat's EV journey

Surat has embarked on a mission to take pre-emptive adaption measures to mitigate the impacts of processes associated with climate change and variability at the city level and has prepared Surat EV policy 2021 to shoulder the national and state objectives of electric mobility and has become the first city in the country. The city is on an advanced stage of EV transition with steps taken to encourage electric buses and other EV modes in the city. The city's EV journey is briefly illustrated as follows:

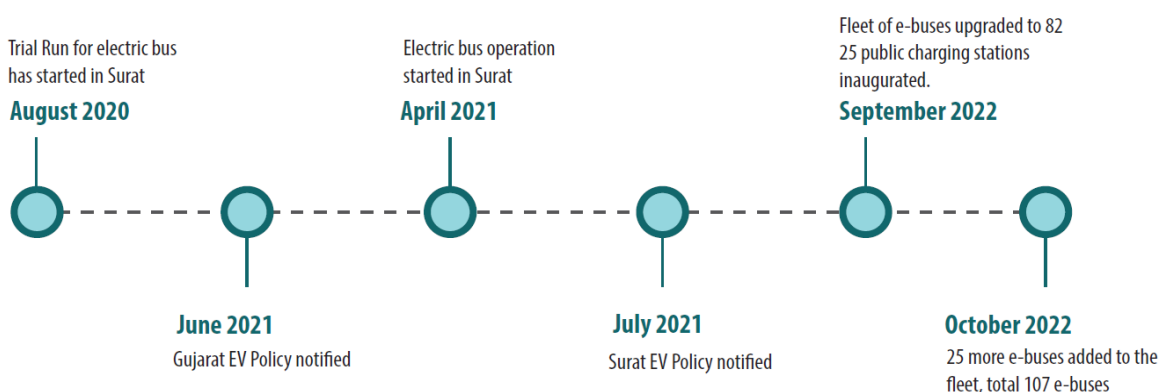


Figure 3: E-mobility milestones in Surat
 (Source- ICLEI SA, information compiled from the officials and online sources)

3.3. Key E-mobility initiatives in Surat

The city administration led by SMC has been focused on accelerated EV transition through strong EV ecosystem and improving the confidence of public through variety of steps to support electrification of vehicles and take actions towards improving the EV readiness in the city. The following table summarises the initiatives undertaken by the government departments in the city.

| Initiative | Key Stakeholders | Description |
|--------------------------------------|--|---|
| Regulatory – EV policy | SMC | The Surat EV policy has been notified with the duration from 1 st Jan 2022 to 30 th Jun 2025 with the aim to become first EV smart city. This is an advanced step through which the city understands the role of city in EV transition and is taking steps towards the same. |
| Electrification of public transport | SMC, SSL, DGVCL/Torrent Power, e-bus operator | 107 e-buses are operational in Surat (as per the information received in October 2022). The city had planned to procure 150 e-buses under the FAME-II and target of 300 e-buses by 2024. |
| Developing charging stations for EVs | SMC, DGVCL/Torrent Power, SUDA, Charging Point Developer (CPO) | Public charging stations (PCS) are being developed in the commercial spaces, land allotted by SMC and other locations for EV users. 25 PCS have been inaugurated (list of these chargers with locations is on the SMC website) and 25 more are under construction. Rate of charging is INR 14/ unit +GST. |
| Electrification of Government fleet | SMC, other government offices and departments in Surat | SMC aims to adopt EVs in phased manner. Encouraging SMC employees to transition to EVs and phased transition to electric waste collection vehicles is mentioned in the EV policy of Surat. |
| Awareness and capacity building | SMC Third Party Consultant/ Technical Consultant | 4 th Green Vehicle Expo was organised in Surat in October 2022. Other awareness sessions are also organised in Surat for sensitisation of public. |

Additionally, Surat is a leader in environment related projects. Some of its ongoing endeavours toward clean development which provide a unique opportunity to integrate EVs within some of these policy mandates include the following the parking policy, Surat clean air action plan, handbook of clean construction practice in Surat city, Surat resilient strategy and Surat environment cell projects

3.4. Key stakeholders in Surat

The following stakeholders in Surat are related to EV transition in the city were consulted during various city visits:

| | Stakeholder | Roles |
|------------------------------|--|---|
| State Government stakeholder | Dakshin Gujarat Vij Company Ltd. (DGVCL) | <ul style="list-style-type: none"> - Approvals for electricity connections - Tariff of charging electric vehicles |
| City Government stakeholder | Surat Municipal Corporation (SMC) | <ul style="list-style-type: none"> - Land owner- Providing land for charging infrastructure - Floating tender for development of charging infrastructure. |
| | Surat SITIlink Limited (SSL) | <ul style="list-style-type: none"> - Bus operation and maintenance - Floating tender for procuring E-buses. - Finalizing tariff of E-buses |
| | Surat Urban Development Authority (SUDA) | <ul style="list-style-type: none"> - Policies related to building - Building plan approvals |
| | RTO Surat | <ul style="list-style-type: none"> - Registration of vehicles- prioritization of EVs through single window clearance. |
| Others | Torrent Power (Some areas of Surat) | <ul style="list-style-type: none"> - Approvals for electricity connections - Tariff of charging electric vehicles - Generation, transmission and distribution of power |

| | | |
|--|-----------------------------|--|
| | Vehicle Technology/ OEMs | <ul style="list-style-type: none"> - EV and EV parts manufacturing and supply - Addressing consumer grievances related to EVs |
| | Builders Association | <ul style="list-style-type: none"> - Ensure implementation of recommendations proposed in GDCR for including a provision for EV charging and parking in buildings |
| | NGOs | <ul style="list-style-type: none"> - Encourage technical training and capacity building needs of the officials involved with EV |

3.5. City EV readiness

Surat city readiness was synthesized after scoring the parameters impacting EV transition. **Twenty-five parameters were listed under 6 categories** including supporting regulatory ecosystem, supply chain preparedness, consumer willingness*, public charging infrastructure, EV ready building readiness and electricity load implication awareness. The scoring of the city was based on the information collected during city visits. The readiness of the city was assessed as follows:

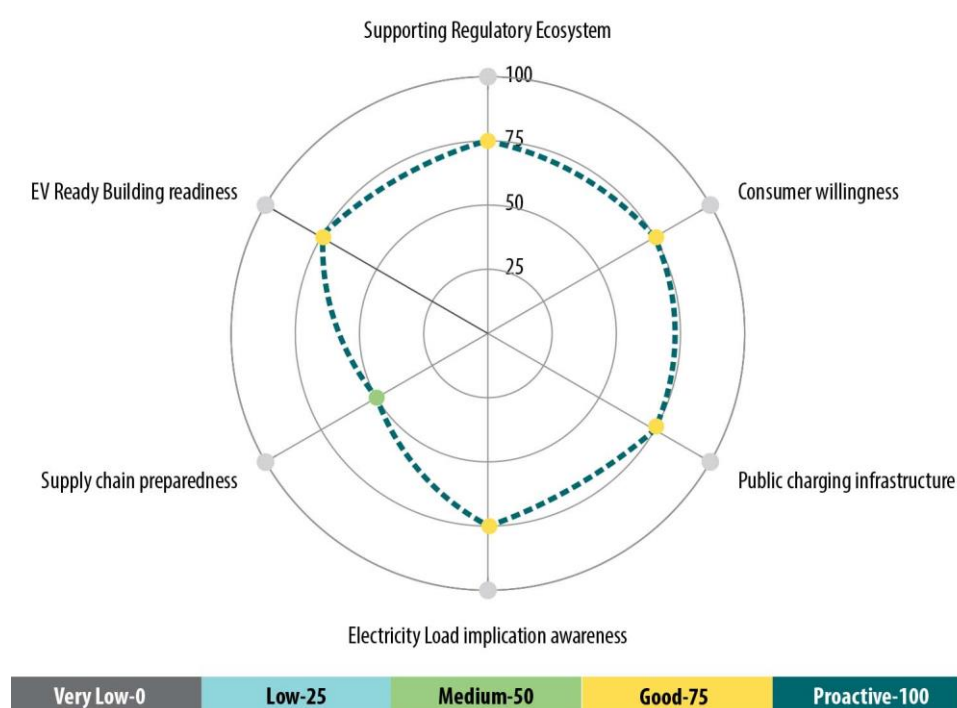


Figure 4: City level readiness index for adoption of e-mobility in Surat (Source- ICLEI SA)

The city is already working on an accelerated transition to EVs through the implementation of the EV policy, improving the existing EV operations in the city, encouraging and sensitizing the users through awareness sessions, and understanding grid readiness. The observations from the city readiness assessment are as below:

The existing regulatory ecosystem at the city level and the state level is robust with well aware officials who acknowledge the importance of a planned process for transitioning to EVs and need for including all the stakeholders in decision making process. The consumers are aware about EV performance and technology are willing to transition from ICE to EVs while awareness sessions and EV expo are organised in Surat to sensitise the public. Public charging stations are being developed to ease the operation of EVs.

The city officials and the officials of Torrent Power are also aware about the expected load implications and additional power infrastructure required for setting up charging stations and roles and actions to be taken. Supply chain preparedness may be improved with improvement in technology for EVs and also development of local repair shops for EVs. Also, the officials are aware and willing to integrate EV charging-parking provision in the building byelaws.

4. City Level Action Plan for Surat for faster transition towards E-Mobility

A series of discussions and consultations with industry experts, advisory groups, and city stakeholders (during city visits) was conducted to develop the approach for cities. The process is as illustrated below:



The six-step approach which Surat should preferably follow to address the challenges identified above are as follows:

As per discussions, Surat city has taken advanced steps in EV adoption and is currently focusing on the steps of 'STRATEGISE', 'DELIBERATE', 'COLLABORATE & ENGAGE', and partially on the 'ACT'. SMC has already notified its EV policy with a vision of envisaging Surat as a leading EV smart city in the country with a clear set of targets and objectives, discussions are underway for various goals (related to EV infrastructure development, electrification of SMC fleet, government vehicles, corporate vehicles as well as private vehicles) for which they are collaborating and engaging with other government and private stakeholders to take actions on the ground.

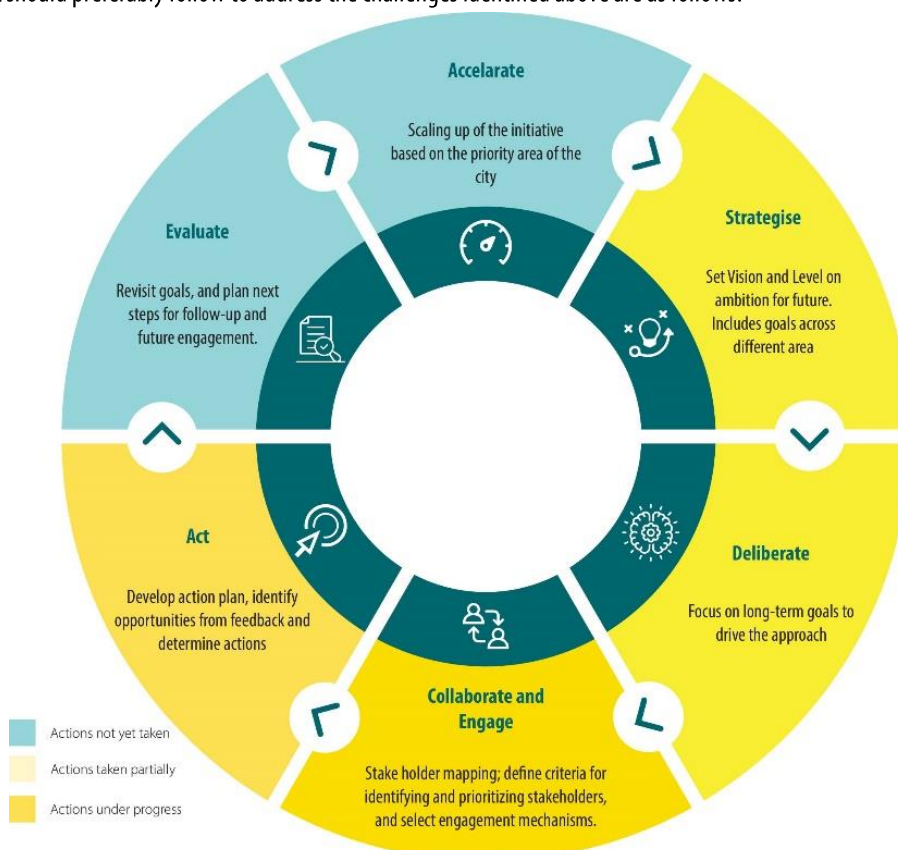


Figure 5: Six Step Approach and status of Surat City (Source- developed by ICLEI SA)

The approach was presented to the stakeholders from agencies responsible for various aspects of EV Ecosystem in Surat in the meetings held in the city. After the first virtual discussion with the SMC officials on 6th May 2022, in-person meetings were held on 2nd – 3rd August 2022 to understand the EV transition status in the city. The City Information Note and this document has been developed based on the interaction and discussions in the city.

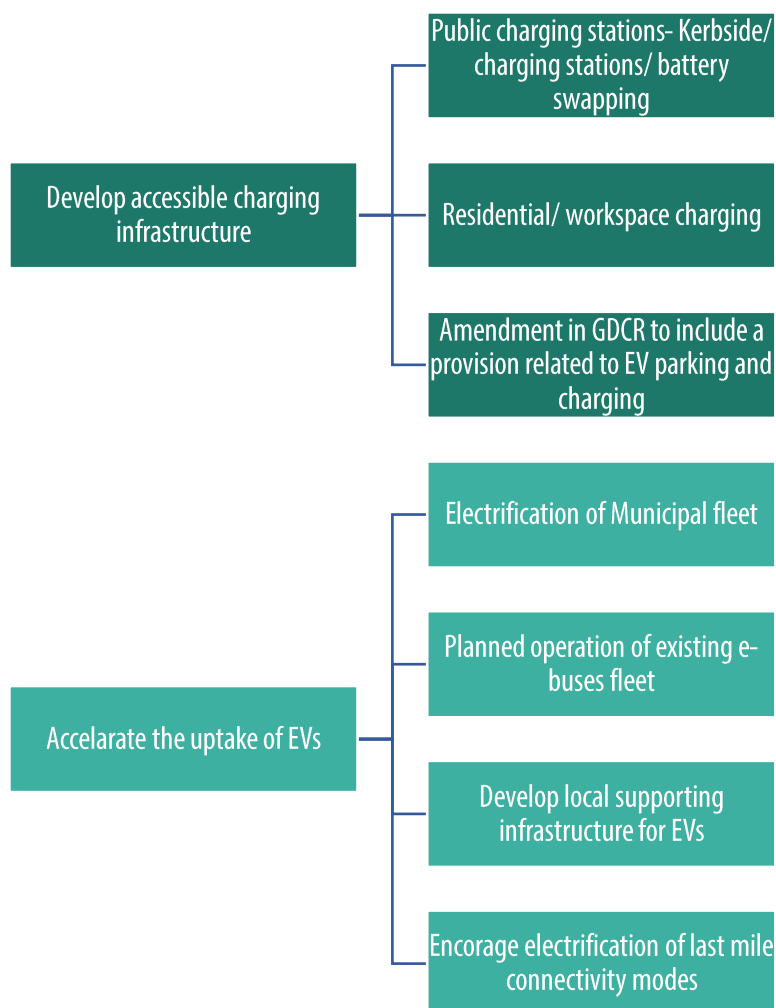
4.1. Strategy Development

Vision and Goals

The vision defined by SMC in line with the City EV Policy and after the discussion and interaction with the officials focuses on “Developing a long-term roadmap with achievable targets for the adoption of EVs in Surat”

City Goals

The city acknowledges the need for specific goals required to achieve a vision and aims to work towards implementing strategies to achieve these goals. The specific goals to achieve the defined vision in the city includes developing accessible charging infrastructure with a specific focus on EV readiness in buildings and pilots to encourage transition of municipal fleet to EVs. The strategies to achieve these goals are as follows:



Objective 1- Develop accessible charging infrastructure

For accelerated EV adoption, initiatives to develop accessible charging infrastructure is important which is unique for each city as per the need. It is presumed that private EV owners will prefer charging at home and the commercial EV operators may need public charging facilities to charge their vehicles while covering larger distance. Also, in case of private EV owners in Surat, there is a challenge to setup a charging facility at the residential spaces specially in multistoried and shared housing societies as there is resistance from the other residents.

The Surat EV Policy mentions the development of EV charging ecosystem through identification of SMC land and encouraging private investment at key locations, create awareness and encourage builders to include charging ecosystem in buildings and the developers of hotels, commercial spaces, work space owners, institutions and other public space developers to include charging facility in their for their customers, plan to sign an MoU with DGVCL and Torrent power to provide priority connections to EV charging stations, amendment in building byelaws to include EV charging infrastructure in residential and non-residential buildings, plan to develop Standard Operating Procedure for issuance of fire and safety NOC as per the National Building Code (NBC) and Central Electricity Authority of India (CEA). The policy also mentions that SMC will also provide rebate in Environment Improvement Charge and provide land parcels on revenue sharing basis to the charging point developers.

In addition to these city level initiatives, national government guidelines for developing EV charging ecosystem includes guidelines to install charging station at every 3km in the cities and at every 50 km (25 km on alternative side) on the highways and the Gol has waived out the licence for any individual to set up a charging station following the guidelines of the Ministry of Power.

The following EV charging strategies with details may be taken up by the city to develop accessible charging infrastructure:

| Strategy | Deliberation | Stakeholders | Actions |
|---|--|--|--|
| Public charging stations- Kerbside/ charging stations/ battery swapping | Existing and future demand | SMC, RTO, third party consultant, industry players | <ul style="list-style-type: none"> - Estimate the expected rise in EV demand and charging infrastructure |
| | Feasibility and suitability of chargers | DGVCL/Torrent Power, SMC, charging station developer | <ul style="list-style-type: none"> - Finalise the number and type of charging stations required as per demand |
| | Location and accessibility | SMC, DGVCL/ Torrent Power, SUDA | <ul style="list-style-type: none"> - Finalise the locations as per the data driven analysis of demand covering major locations in the city. - Ensure accessibility of the charging stations - Integrate recreational spaces where EV charger user may wait/utilise their time |
| | Roles and responsibilities of stakeholders | SMC, DGVCL, Torrent Power, RTO, SUDA, SSL, RTO, Builders Association, Industry players, OEMs | <ul style="list-style-type: none"> - Combined meeting to discuss the roles and responsibilities of all the stakeholders - Ensure that all the civil works and installations are assigned to the related stakeholders |
| | Discussion, development and next steps | SMC, charging point Operators and e-mobility service provider (CPOs and e-MSPs), DGVCL/Torrent Power, SUDA | <ul style="list-style-type: none"> - Ensuring electricity grid readiness - Tendering for EV charging ecosystem - Approvals from various departments - Procurement and installation of additional infrastructure (transformer, substation equipment, safety equipment as per need, cables, lines, meters) - Development of EV charging ecosystem in a phased manner - Encourage private entities to develop charging facilities through awareness and incentives - Tariff fixation and collection system - Safety and security of equipments - Awareness related to locations of EV charging ecosystem. - Develop a management and monitoring system and review the usage of charging station to understand the daily usage and |

| | | | |
|---|---|---|---|
| | | | decide on future opportunities to install charging station as per need. |
| Residential/workspace charging | Existing and future demand and challenges | RTO, RWAs/workspace official, third party consultant, EV owners, Architect/ Contractor/ Building Association | <ul style="list-style-type: none"> - Analyse the existing demand and expected rise - Understand the challenges faced by the EV users in setting up charging infrastructure |
| | Ensure all new construction in the city provide EV charging facility | SMC SUDA Building owner/workspace DGVCL/Torrent Power Architect/ Contractor/ Building Association | <ul style="list-style-type: none"> - Incorporation of EV charging and parking provision in building byelaws (GDCR) - Incorporation of requirement of separate power outlet for EV charger connected to the meter of respective resident (EV Owner) - Incorporate the requirement of additional electricity load in GDCR - Integrated fast track approval of building plans with approvals for safety and electricity load |
| Amendment in GDCR to include a provision related to EV parking and charging | Existing GDCR and parking regulations, need for amendment - Currently, in some cases, users residing in multistoried buildings face difficulty in setting up charging facility for their EVs at common spaces of their residential society/ apartments due to resistance from other residents/ society. | SMC DGVCL/Torrent Power SUDA Architect/Builder's Association Third Party Consultant RWAs | <ul style="list-style-type: none"> - Discussion with the stakeholders to decide the points to be added in the GDCR for EV related provisions. - Calculate the EV bays by vehicle types (two/four wheeler) - Rise/expected rise in electricity load due to EV charging - Document and analyse the issues and challenges faced by EV users residing in multistoried buildings - Develop a guideline document with recommendations to be incorporated in GDCR |
| | Amendment in GDCR for new buildings | SMC DGVCL/Torrent Power SUDA Architect/Builder's Association | <ul style="list-style-type: none"> - Incorporate requirement of power outlets capable of providing EV charging for 100% residential parking space - Provision for additional electricity load for EV charging - EV charging ready spaces for 20% of parking spaces in new buildings - Requirement of NoC from DGVCL/Torrent Power (grid readiness, load calculations), Chief Electricity Inspector (standards and electrical safety) and Fire Inspector (fire safety) during approval of building plans stage - Ensure safety and security of charging equipments and other installations - Develop guideline for design considerations, probable design solutions for charging infrastructure, accessibility, approvals and tariff |

| | | | |
|--|--|--|--|
| | Amendment/ provision for retrofitting in existing buildings to include EV charging and parking provision | SMC DGVCL/Torrent Power SUDA Architect/Builder/ Contractor | <ul style="list-style-type: none"> - Analysis of existing building type, use, demand - Guideline for design considerations, design solutions for charging infrastructure, accessibility, approvals and tariff for charging - Provision for additional electricity load for EV charging - Requirement of NoC from the DGVCL/Torrent Power, CEI and fire inspector for retrofitting - Ensure safety and security of charging equipments and other installations |
|--|--|--|--|

Objective 2- Accelerate the adoption of EVs

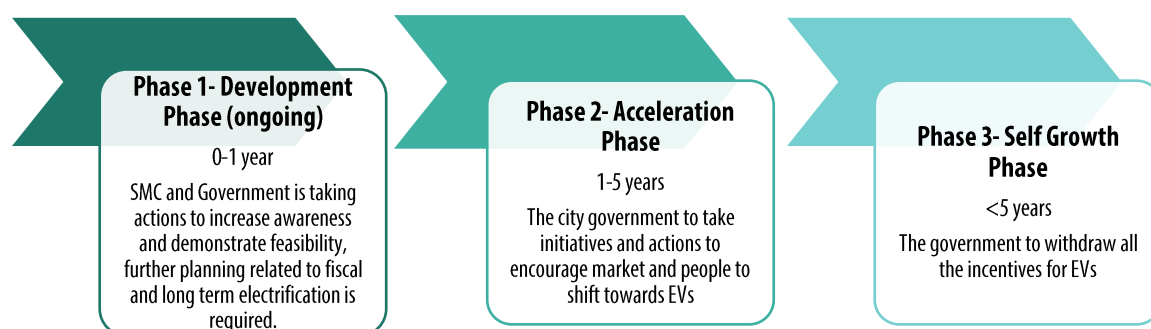
Surat EV policy provides various incentives and targets to increase the total number of EVs to 40300 by June 2025 (including 2 wheelers, 3 wheelers, 4 wheelers and e-buses). Vehicle tax exemption, rebate in environmental improvement charge and parking slot in SMC parking are some of the incentives for EV buyers as per the policy. Incentives to SMC employee for transitioning to EVs, plan to shift to electric door to door waste collection vehicle, pink auto project and plan to transition to EVs in a phased manner by SMC are also stated in the policy. These will increase the confidence of public in EVs and encourage more buyers to shift to EVs. The following strategies with details may be taken up by the city to accelerate the uptake of EVs (details of initiatives mentioned in the policy)

| Strategy | Deliberation | Stakeholders | Actions |
|---|---|--|---|
| Electrification of Municipal Fleet | Existing municipal fleet and size | SMC Other Government offices Third Party Consultant | <ul style="list-style-type: none"> - Existing fleet size and age of vehicles - Expected demand for EVs, charging infrastructure and electricity - Feasibility study for each fleet type to understand the financial resources required and usage feasibility - Encourage procurement of electric municipal fleet for all the new vehicles |
| | Supporting infrastructure and approvals (if required) | SMC DGVCL/Torrent Power Charge Point Developer and Operators (CPOs) and E-Mobility Service Provider (e-MSPs) | <ul style="list-style-type: none"> - Finalise the location for charging in the office premises - Approvals from Torrent Power/DGVCL - Additional power infrastructure required (if any) and attached financial obligations |
| | Demand aggregation for bulk purchase | SMC OEMs NBFC DGVCL/Torrent Power other government departments including SSL, SUDA, SSCDL and others | <ul style="list-style-type: none"> - Develop an action plan/ strategy for scaling up the pilot of electrification of municipal fleet - Projected increase in electricity demand, charging infrastructure - Grid readiness - Programs to encourage government offices to transition to EVs - Training and capacity building for operators/drivers of municipal fleet. |
| Planned operation of existing e-buses fleet | Existing e-bus operation, challenges | SSL E-bus operator | <ul style="list-style-type: none"> - Document and analyse the routes of E-buses and their operation. - Understand the challenges in operation and maintenance of e-buses |

| | | | |
|--|---|--|---|
| | | | <ul style="list-style-type: none"> - Capacity building and training for staff and operators of e-buses - Plan the charging depot locations in a way to reduce the dead kilometers |
| | Scale up operation of e-bus in a planned manner | SSL SMC E-bus operator | <ul style="list-style-type: none"> - Scale up the operation of e-bus on routes as per demand - Charging and maintenance facility for the e-buses considering the routes and exploring the possibility of opportunity charging facility at existing bus depot in the city |
| Encourage electrification last mile connectivity modes | Existing last mile connectivity modes to public transport | SMC RTO Traffic Police Auto Association/other association | <ul style="list-style-type: none"> - Understand and document the existing last mile connectivity modes - Document the routes, distance, frequency, load carrying requirements, other requirements of last mile connectivity modes - Explore the possibility of transitioning the existing fleet to EVs in phased manner |
| | Phased transition to EVs | SMC RTO Traffic Police Auto Association/other association | <ul style="list-style-type: none"> - Finalise the modes- e-auto/e-rickshaw which can be used as an electric alternative to the existing auto/rickshaw option depending on the route, distance, requirements. - Mandate of registering only EV as a new last mile connectivity mode - Allow registration of only those number of EVs which can be managed |
| Develop local supporting infrastructure for EVs | Develop accessible charging / swapping stations | SMC SUDA Charging point developer and operator Third party consultant | <ul style="list-style-type: none"> - Amendment in building byelaws to include EV parking and charging provision in all new and existing buildings. - Ensure the accessibility of charging infrastructure in the city as well as on the highways - Encourage private players to develop the charging/ swapping stations - Ensure safety and security of these charging stations. - Monitor the usage of these charging stations before planning on scaling up the infrastructure network. |
| | Developing local repairing stations for EVs | SMC SUDA OEMs Industry players Local repair shop developer | <ul style="list-style-type: none"> - Capacity building and training sessions by the OEMs to the local repair shop owners - Handholding support from the OEMs/ government to setup the repairing shops for EVs - Monitor the common vehicle issues which require repairs and steps to be taken by the OEMs to address the same in new vehicles. |

4.2. Roadmap for e-mobility in Surat

As discussed above, Surat is an advanced city taking initiatives to transition towards EVs with long term vision. The roadmap to implement the vision and goals as per its EV policy is as follows:



Phase 1- Development Phase

This is the ongoing phase in Surat, when the city is defining targets and planning to take actions along with starting to take these actions gradually. The actions required in addition to the existing actions in this phase are as follows:

| | | Action details |
|--|---------------------------------|--|
| | Nodal Committee | <ul style="list-style-type: none"> Surat Municipal Corporation should form the EV Policy Managing Committee (nodal committee) and combined meeting with all the relevant stakeholders so that they are aware about the committee and its functions. |
| | Demand projections and database | <ul style="list-style-type: none"> EV demand assessment and projections Estimate the future demand for charging infrastructure Expected rise in demand for electricity for charging EVs Initiate compilation of data to develop a database related to EV operations (public transport, IPT and private vehicles) |
| | Public Transport and IPT | <ul style="list-style-type: none"> Continue the operation of e-buses and document the operation and plan to scale up the operation accordingly. Promote electric IPT for last mile connectivity to the BRTS |
| | Charging stations | <ul style="list-style-type: none"> Encourage private players to develop charging stations in the city and highways Integrating database of all operational charging station with command and control centre operated by SMC. Updating the webpage of SMC which includes the location of charging stations in the city from time to time. |
| | Fiscal planning | <ul style="list-style-type: none"> Alignment with national and state level incentives Fiscal outlay planning, tax rebates, incentives Non-monetary incentives (recognition, priority, etc.) |
| | Awareness and capacity building | <ul style="list-style-type: none"> Continue organising the events for awareness of public Awareness related to EV ready buildings Staff orientation and capacity building |

Phase 2- Acceleration Phase

The city government needs to take initiatives and actions to encourage market and people to shift towards EVs

| | | Action details |
|--|---|---|
| | EV readiness in buildings | <ul style="list-style-type: none"> Amendment to include a provision of EV parking and charging in buildings Consideration of expected electricity load rise |
| | Scaling up the operation of e-buses and e-IPT | <ul style="list-style-type: none"> Scaling up the operation of e-buses based on the operation data Encouraging the scale up of electric IPT for last mile connectivity and shorter distances. Ensure that all the new registered IPT is electric vehicle. Develop charging stations for E-IPT along the BRTS corridor. |

| | |
|---|---|
| Encourage government and corporate offices to transition to EVs | <ul style="list-style-type: none"> - Awareness for the existing incentives for SMC officials willing to transition to EVs, also for the other EV buyers - Continue encouraging the government officials transitioning to EVs - Encourage the corporate offices to integrate EVs in their fleet and further scale up with time as per their feasibility |
| Skill development | <ul style="list-style-type: none"> - EV repair and service skill development - Capacity building for EV drivers/operators |
| Integration with existing regulations | <ul style="list-style-type: none"> - Integration of public charging station locations with the parking policy - Integration of EV related actions with development of low emission zones as per the Surat Clean Air Action Plan - Integration with other policies/plans including the Climate resilient city action plan, Low carbon comprehensive mobility plan |
| EV integration with large Govt. Projects | <ul style="list-style-type: none"> - EV integration with projects like tourism destination projects, iconic projects, and other similar interventions |
| Database | <ul style="list-style-type: none"> - Develop a database of EV demand transition for conscious future actions related to EV adoption acceleration |

Phase 3- Self Growth Phase

The government should withdraw all the incentives (financial and others) related to encouraging people to shift to EVs, although the programs to develop the EV support ecosystem should continue along with the monitoring of the development and operations.


| | Action details |
|---|--|
| Updation and monitoring | <ul style="list-style-type: none"> - Updating the Surat EV policy document/amendment stating the changes - Awareness among the builders/contractors and architects related to increase in demand for EVs and its supporting infrastructure, EV charging provision integration in buildings as per the demand - Discontinue all the financial incentives to the EV buyers |
| Continuous operations and management across all phases | <ul style="list-style-type: none"> - EV committee and its roles - Survey and analysis - Digitalization and information management for database - Awareness campaigns for drivers, operators, users, support infrastructure developers, government officials and all the related stakeholders. - Identifying revenue generating streams - Exploring new / innovative partnerships - Continuous monitoring, evaluation and verification |
| Integration of EV in Long term planning documents such as MP, LAP, DPs etc. | <ul style="list-style-type: none"> - Adopting EV transition as an integral part of city's visioning - EV and EV related infrastructure to be planned and designed within the city's development policy, master plans and other notified documents - Update GDCR to provide for changing EV adoption - Long term fiscal planning and O&M Strategy for EV infrastructure |


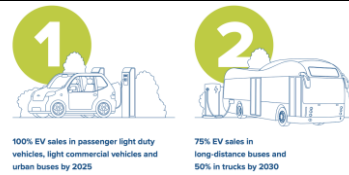
5. Annexure


4.1 Annexure 1: Approaches from around the world



Globally, cities have worked on innovative visioning, incentivization for buying Electric Vehicles, special consideration for EV fleet, Tax rebates for EV vehicles, business and government partnerships, clean energy visioning for land use development and power sector involvement with businesses to name a few. Some of these are mentioned below.



Cities in Gujarat may undertake similar initiatives to work towards clean air city and making electric vehicle widely accepted, chosen, and used amongst the community.


| No. | City / Country | Name Of the Case | Description | Link to the document | Illustration | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|----------------|---|--|---|--|--|-----------|-----------|--|--|--|--|--|--|--------------|-----------|--------------------|---|--|--|--|--|--|---|---|---|---|---|---|----------------|------------|-----|------|-----------|-----------|-----------|-----------|-----------|-------------|------------|------|------|-----------|-----------|-----------|-----------|-----------|--------------|-----|------|------|-----------|-----------|-----------|-----------|-----------|-------------------------------|---------|-----|------------------------------|--|--|--|--|--|--|-------------|-----|------------------------------|--|--|--|--|--|
| 1 | New York, USA | Truck Voucher Incentive Program | <p>There's Never Been a Better Time to Upgrade Your Fleet to Zero-Emission Vehicle Technology. Zero-emission truck and bus technologies are more accessible than ever to fleets in New York State. These advanced vehicles are typically less expensive to operate and often far less noisy than diesel trucks or buses and eliminate tailpipe pollution.</p> <p>The New York Truck Voucher Incentive Program (NYTVIP), administered by the New York State Energy Research and Development Authority (NYSERDA), helps make it easier for fleets to adopt zero-emission vehicle technologies while removing the oldest, dirtiest diesel engines from New York roads. NYTVIP provides vouchers, or discounts, to fleets across New York State that purchase or lease medium- and heavy-duty zero-emission battery electric (BEV) or hydrogen fuel cell electric (FCEV) vehicles. Voucher amounts are based on a percentage of the incremental cost of the vehicle, which is the difference in cost between the zero-emission vehicle and a comparable diesel vehicle, up to a per-vehicle cap. Voucher incentive amounts may differ by vehicle type, vehicle weight class, and location where the vehicle is domiciled. Voucher amounts are subject to funding availability and applicable per-project caps. For more information about program eligibility and rules, consult the Program Implementation Manual</p> | https://www.nyserda.ny.gov/All-Programs/chargenyl/drive-electric | <table><thead><tr><th colspan="9">Voucher Amounts and Caps for All Vehicle Types</th></tr><tr><th rowspan="2">Vehicle Type</th><th rowspan="2">Fuel Type</th><th rowspan="2">Incremental Cost %</th><th colspan="6">Voucher Amount: Vehicle Weight Class (GVWR)</th></tr><tr><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th></tr></thead><tbody><tr><td>On-Road Trucks</td><td>BEV / FCEV</td><td>95%</td><td>\$ -</td><td>\$100,000</td><td>\$150,000</td><td>\$225,000</td><td>\$250,000</td><td>\$385,000</td></tr><tr><td>Truck Buses</td><td>BEV / FCEV</td><td>100%</td><td>\$ -</td><td>\$100,000</td><td>\$125,000</td><td>\$150,000</td><td>\$250,000</td><td>\$385,000</td></tr><tr><td>School Buses</td><td>BEV</td><td>100%</td><td>\$ -</td><td>\$100,000</td><td>\$125,000</td><td>\$150,000</td><td>\$200,000</td><td>\$220,000</td></tr><tr><td>Port Cargo Handling Equipment</td><td>New BEV</td><td>90%</td><td colspan="6">\$170,000 across all classes</td></tr><tr><td></td><td>Repower BEV</td><td>90%</td><td colspan="6">\$400,000 across all classes</td></tr></tbody></table> | Voucher Amounts and Caps for All Vehicle Types | | | | | | | | | Vehicle Type | Fuel Type | Incremental Cost % | Voucher Amount: Vehicle Weight Class (GVWR) | | | | | | 3 | 4 | 5 | 6 | 7 | 8 | On-Road Trucks | BEV / FCEV | 95% | \$ - | \$100,000 | \$150,000 | \$225,000 | \$250,000 | \$385,000 | Truck Buses | BEV / FCEV | 100% | \$ - | \$100,000 | \$125,000 | \$150,000 | \$250,000 | \$385,000 | School Buses | BEV | 100% | \$ - | \$100,000 | \$125,000 | \$150,000 | \$200,000 | \$220,000 | Port Cargo Handling Equipment | New BEV | 90% | \$170,000 across all classes | | | | | | | Repower BEV | 90% | \$400,000 across all classes | | | | | |
| Voucher Amounts and Caps for All Vehicle Types | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Vehicle Type | Fuel Type | Incremental Cost % | Voucher Amount: Vehicle Weight Class (GVWR) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| On-Road Trucks | BEV / FCEV | 95% | \$ - | \$100,000 | \$150,000 | \$225,000 | \$250,000 | \$385,000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Truck Buses | BEV / FCEV | 100% | \$ - | \$100,000 | \$125,000 | \$150,000 | \$250,000 | \$385,000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| School Buses | BEV | 100% | \$ - | \$100,000 | \$125,000 | \$150,000 | \$200,000 | \$220,000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Port Cargo Handling Equipment | New BEV | 90% | \$170,000 across all classes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Repower BEV | 90% | \$400,000 across all classes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Spain, EU | Spain Puts European Recovery Funds into Electric Car Push | <p>Spain's first pay out of coronavirus recovery funds will target clean transportation, with a still-in-development plan to create a domestic industrial supply chain for electric vehicles and their supporting battery manufacturing capacity.</p> <p>A public-private partnership for battery manufacturing in Catalonia is the first strategic project within the Spanish recuperation, transformation and resilience plan, Spain's Minister of Industry, Trade and Tourism María Reyes Maroto Illera announced last week.</p> | https://www.greentechmedia.com/articles/read/spain-puts-european-recovery-funds-into-electric-car-push |  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| No. | City / Country | Name Of the Case | Description | Link to the document | Illustration |
|-----|----------------|--|--|---|---|
| 3 | Portland, USA | Citywide Charging Facility: Public charging in Portland | <p>There are over 400 public EV charging plugs in Portland and an additional 800+ in the Portland metro area (see map)! The city has been providing convenient, accessible, fast charging since 2011 on Electric Avenue in downtown Portland, which has four Level 2 charging stations and one DC fast charging station. PBOT is currently working on new policy to permit the installation of EV chargers in the public right-of-way.</p> <p>You can find the location of all current public charging stations in the Portland area or anywhere else you might be traveling to on the Department of Energy's Alternative Fuels Data Centre.</p> <p>Many workplaces also offer EV chargers in company parking lots or garages, so don't forget to check with your employer when considering your charging options.</p> | https://www.portland.gov/transportation/electric-vehicles/charging-your-ev |  |
| 4 | Europe | Update on electric vehicle uptake in European cities | <p>The European electric vehicle (EV) market experienced unprecedented growth in 2020. More than 1.36 million new electric passenger cars, including battery electric (BEV) and plug-in hybrid electric vehicles (PHEV), were sold across the region, a 143% increase from 2019. The robust sales in 2020 made Europe the largest EV market globally, surpassing China.¹ This came during a period of major disruption in the vehicle market due to COVID-19: Although sales of all new cars in Europe fell by 20%, the surge in EV sales boosted the EV share to 11%. Several individual European markets achieved far greater shares of new EV sales: 75% in Norway, 32% in Sweden, 25% in the Netherlands, 18% in Finland, 16% in Denmark, 14% in Switzerland and Portugal, 13% in Germany, and 11% in France, Belgium, and the United Kingdom.</p> <p>This paper provides updates on the European EV market in 2020 at the European, national, and local levels. The data include new passenger car sales at the European and national levels and new registrations, which are considered a proxy for new car sales, at the subnational level. Data on new vehicle registrations, model availability, and charging infrastructure are presented at the metropolitan region level for major markets across Europe.⁴ The analysis includes the 17 largest national EV markets in Europe in terms of 2020 EV sales volume, and includes local-level data, where available, for 16 of these countries. The paper also summarizes and provides examples of local EV policies that have driven high levels of EV uptake in several metropolitan regions.</p> | https://theicct.org/sites/default/files/publications/ev-uptake-eu-cities-oct21.pdf | |
| 5 | Norway, EU | Electric vehicle adoption, Norway | <p>Norway leads electric vehicle (EV) adoption, boasting the highest share of new EV purchases worldwide. In the last five months, zero-emission vehicles have made up over 50% of its overall car sales, up from 31.2% in 2018 and 42.4% in 2019. Compared to the USA, where EVs make up only 2% of new car sales, this gives one a good idea of Norway's strong leadership position in terms of EV market share. So how did this largely rural Scandinavian country become the global leader in EV adoption? To learn from its experience, let's look back through Norway's 30-year journey to becoming an EV giant: it all started with a mission to curb the country's CO₂ emissions.</p> | https://blog.wallbox.com/how-norway-became-a-global-ev-leader/ |  <p>1. 100% EV sales in passenger light duty vehicles, light commercial vehicles and urban buses by 2025</p> <p>2. 75% EV sales in long-distance buses and 50% in trucks by 2030</p> |

| No. | City / Country | Name Of the Case | Description | Link to the document | Illustration |
|-----|--|--|---|---|--|
| 6 | Stoughton, Watertown Massachusetts. Minnesota New York | Making Your City “EV-Ready” | <p>Cities have tremendous influence over how and where infrastructure is built and serve as a critical and necessary partner in the market transformation effort to make EVs a significant part of the nation’s passenger car fleet. Therefore, cities need to be “EV-ready” in policy, regulation, capital improvements, and in planning for public and private infrastructure. The Great Plains Institute (GPI) has identified five principles for what constitutes an EV-ready city:</p> <ul style="list-style-type: none"> • Policy: Acknowledge EV benefits and support development of charging infrastructure • Regulation: Implement development standards and regulations that enable EV use • Administration: Create transparent and predictable EV permitting processes • Programs: Develop public programs to overcome market barriers • Leadership: Demonstrate EV viability in public fleets and facilities | https://betterenergy.org/blog/making-your-city-ev-ready/ | |
| 7 | London, England | Ultra-Low Emission Zone: EV enabled city | <p>London has been aggressively pursuing a low-emission policy with an aim at transitioning to zero emission road transport system by 2050. London is in the process of implementing Ultra Low Emission Zone (ULEZ) from 2019 onwards. ULEZ is a traffic management and emission reduction scheme with an aim at improving local urban air quality. ULEZ will be implemented in a phased manner. It will first be implemented within the same area as the current Congestion Charge Zone and will be in place in central London. From 2021 onwards, the ULEZ will include the inner London area.</p> <p>Most vehicles, including cars and vans will need to meet new, tighter exhaust emission standards (ULEZ standards) or pay a daily charge to travel within the area of the ULEZ. Towards this effort, the city is aiming at converting its entire taxi fleet and private hire vehicles to zero emission by 2033 and its entire bus fleet by 2037.</p> | https://tfl.gov.uk/modes/driving/ultra-low-emission-zone |  |
| 8 | California, USA | The Electric Mobility Revolution in Southern California | <p>California already accounts for nearly half of EV sales in the United States and is spearheading new transportation policies that transcend the rest of the nation’s standards. Currently, state goals set by former Governor Edmund G. Brown are pushing for five million automobiles on the road to be zero-emission vehicles by 2030, along with 250,000 charging stations for support.⁵ As of late 2018, there were only 435,000 ZEVs on California’s roads. However, California vehicle data lends some reasons for optimism regarding the state’s goal. The average yearly increase of new</p> | https://laedc.org/wp-content/uploads/2020/03/EV_Report_Digital_FINAL_Single_Page.pdf | |

| No. | City / Country | Name Of the Case | Description | Link to the document | Illustration | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|-------------------------------|---|--|---|--|--|------------|------------|----------------|-----------------|-------------------------|----------------------------------|-------------------------------|--|-------------|------------|---------------------------------|-----------------------|--------------|---------------------------------|--------------------------------|-----------------------------|-------------------------------|-----------------|-----------------------------|----------------------|------------------------------|--------------------------|--------------------------|
| | | | registered ZEVs between 2007 and 2018 of 82 percent suggests consumers are eager to switch to EVs and adoption is making its way towards Southern California Edison's (SCE) ambition of reaching 7.5 million EVs on the road by 2030, which SCE believes necessary to achieve California's climate goals. According to California's registration data, 2018 marked the first year in which pure battery electric vehicle (BEVs) registrations surpassed that of plug-in hybrid electric cars (PHEVs), resulting in over 22,000 more BEVs than PHEVs on California's roads. This is a market signal that California consumers view pure battery electric vehicles favourably, particularly in the Bay and Southern California areas. ZEVs are also contributing to a large and growing share of California's exports. In 2019, transportation equipment exports – which includes motor vehicle manufacturing as a subcategory – accounted for 13 percent, or \$22.7 billion, of the state's global exports in 2019. Moreover, these exports grew 18 percent from 2018. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Japan | Electric mobility driven by OEMs, Japan | The government focuses on providing direct consumer incentives, building public charging infrastructure and investing in research and development of EVs. | https://rmi.org/wp-content/uploads/2019/07/rmi-electric-mobility.pdf | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | Shenzhen, China | Electric buses in Shenzhen | Shenzhen has the world's first and largest fully electric bus and taxi fleets. Its electrification journey offers a valuable opportunity to understand the challenges and opportunities of transitioning to a completely new technology for public transit. Based on a comprehensive study undertaken by the World Bank, Shenzhen Bus Group Co. Ltd. (referred as SZBG), UC Davis and China Development Institute, this case study outlines the main aspects of the full transition to electric buses of SZBG, one of the three major operators in Shenzhen. | https://iea.blob.core.windows.net/assets/db408b53-276c-47d6-8b05-52e53b1208e1/e-bus-case-study-Shenzhen.pdf |  | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | New Jersey, USA | Charge Up Your Town: Best Management Practices to Ensure Your Town is EV Ready | As part of its commitment to reduce energy consumption and greenhouse gas (GHG) emissions from the transportation sector (42% of the State's net GHG emissions), New Jersey is implementing a suite of strategies in a concerted effort to increase the number of light-duty electric vehicles (EV) on the road and to ensure sufficient public electric vehicle charging infrastructure. Municipalities are at the core of this activity. A significant percentage of Electric Vehicle Supply/Service Equipment (EVSE), often referred to as EV charging infrastructure or EV charging stations, installed in New Jersey will be overseen by municipal officials and this guide is designed to help facilitate that process. | https://nj.gov/dep/drivegreen/pdf/chargeupyourtown.pdf | <div>EV Charging Station Comparison</div>  <table><thead><tr><th></th><th>AC Level 1</th><th>AC Level 2</th></tr></thead><tbody><tr><td>Voltage</td><td>120V 1-Phase AC</td><td>208V or 240V 1-Phase AC</td></tr><tr><td>Suitable for Installation</td><td>Single-family Multi-family</td><td>Single-family Multi-family Commercial Municipal/Private Fleet</td></tr><tr><td>Amps</td><td>12-16 Amps</td><td>12-90 Amps (typical 32 Amps)</td></tr><tr><td>Charging loads</td><td>1.4 - 1.9 kW</td><td>2.5 - 19.2 kW (typical 7 kW)</td></tr><tr><td>Charge time for vehicle</td><td>3-5 miles of range per hour</td><td>10-20 miles of range per hour</td></tr><tr><td>Best for</td><td>6+ hour or overnight charge</td><td>2-6 hour dwell times</td></tr><tr><td>Station hardware cost</td><td>\$500 - \$1,000 per port</td><td>\$600 - \$5,000 per port</td></tr></tbody></table> | | AC Level 1 | AC Level 2 | Voltage | 120V 1-Phase AC | 208V or 240V 1-Phase AC | Suitable for Installation | Single-family Multi-family | Single-family Multi-family Commercial Municipal/Private Fleet | Amps | 12-16 Amps | 12-90 Amps (typical 32 Amps) | Charging loads | 1.4 - 1.9 kW | 2.5 - 19.2 kW (typical 7 kW) | Charge time for vehicle | 3-5 miles of range per hour | 10-20 miles of range per hour | Best for | 6+ hour or overnight charge | 2-6 hour dwell times | Station hardware cost | \$500 - \$1,000 per port | \$600 - \$5,000 per port |
| | AC Level 1 | AC Level 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage | 120V 1-Phase AC | 208V or 240V 1-Phase AC | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Suitable for Installation | Single-family Multi-family | Single-family Multi-family Commercial Municipal/Private Fleet | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Amps | 12-16 Amps | 12-90 Amps (typical 32 Amps) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Charging loads | 1.4 - 1.9 kW | 2.5 - 19.2 kW (typical 7 kW) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Station hardware cost | \$500 - \$1,000 per port | \$600 - \$5,000 per port | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| No. | City / Country | Name Of the Case | Description | Link to the document | Illustration |
|-----|----------------|--|---|---|---|
| 12 | Hongkong, Asia | The spatial planning of public electric vehicle charging infrastructure in a high-density city using a contextualized location-allocation model | The optimal deployment of public charging infrastructure is critical to the popularization of electric vehicles (EVs) in high-density cities. Existing studies on public EV charging facilities have rarely integrated government policy and spatial constraints into their optimization algorithms. To address this research gap, we proposed a contextualized EV charger optimization model that incorporates carefully derived supply-and-demand constraints and tested it in the case of Hong Kong. From the supply side, we studied the latest planning guidelines and conducted a spatial analysis of potential charging sites. From the demand side, we conducted a questionnaire survey with local residents, estimated their EV purchase intention using a generalized ordered probity model, and then projected the usage demand for public chargers. These supply-and-demand constraints were subsequently incorporated into a location-allocation model to minimize both charging demand shortfall and travel time to charging facilities. Several key recommendations regarding the spatial planning of public EV charging facilities in our high-density context: The existing charging network should be substantially expanded to meet the projected demand; The charging network should be expanded beyond the central business district and the urban core into other urban neighbourhoods and suburbs; and Installing more chargers at existing charging stations is more economical than building new stations. | https://reader.elsevier.com/reader/sd/pii/S0965856422000465?token=1FFF60AA2C390553E3449B32E773F79463A33CAEEAADC506C5C9CDA409275E9124CDBDF401150301BE172666A123D3F&originRegion=eu-west-1&originCreation=20221103125316 |  <p>The diagram illustrates the methodology workflow, divided into Supply-side analysis and Demand-side analysis. The Supply-side analysis involves Government data, Existing charging supply (Charger location, Charger number by type, Charger provision), Potential charging supply (Car park location, Car park size), and EV charging supply. The Demand-side analysis involves Questionnaire survey (Charging intention, Charging interval, Public charging utilization rate), Macroscopic data (Charging station rate, EV purchase intention), and EV purchase demand. These lead to a Generalized ordered probity model, which then feeds into EV charging demand. Additional constraints derived from facility analysis (Total budget, Charging station coverage radius, Fixed and unit costs of chargers, Deployment proportion of chargers by type, Daily charging capacity of chargers) are incorporated into the Location allocation model. The final step is Optimal deployment scheme of public chargers.</p> |
| 13 | Singapore | An Easy Guide to EV and EV Charging Incentives in Singapore: An Easy Guide to EV and EV Charging Incentives in Singapore | Since 2020 and throughout this year (2021) Singapore's Government has laid out new plans, incentives and tax reductions to phase out the use of internal combustion engine (ICE) vehicles, with a major new push towards a green future for the Southeast Asian Island. These incentives will try to encourage citizens to be part of the evolution onto a greener and cleaner power source system. Motivating them not only to have a clean energy source for vehicles but also incorporate them to their daily basis lifestyle. Having a clean energy source is not just friendly to the environment but also to their owners' pockets. | https://blog.wallbox.com/en/singapore-ev-incentives/ | |
| 14 | Singapore | Prepping ahead: Why the future looks bright for S'pore's transition towards an EV-ready city | Like many countries, Singapore has big plans to go green and move towards using cleaner energy sources to lower our carbon footprint. To achieve that, targets have been set to have 100 per cent of our vehicles running on cleaner energy by 2040. It is an ambitious and visionary goal, and no doubt, one that would bring incomparable benefits to our quality of life when reached. Judging by the upward trajectory of electric vehicle (EV) sales today, a decarbonized economy is likely to become a reality. In fact, one could say that Green Plan 2030 has more likelihood of success than the ill-fated Goal 2020. | https://vulcanpost.com/806048/why-the-future-looks-bright-for-singapore-ev-transition/ |  <p>A photograph showing a row of green and white electric vehicle charging stations in a parking lot. The ground is marked with green paint and white lines, indicating a designated EV charging area.</p> |
| 15 | Hongkong | Hong Kong EV Power Limited (EV Power) | a member of EV Power Group, was founded in 2010. It is a prominent expert in Electric Vehicle (EV) Charging. We aimed to widen the adoption of EV in Hong Kong. Being the EV Charging solution pioneer, EV Power is leading the market with the best charging solution and standard. We hope to turn the city to be greener and more environmentally friendly and promote the use of EVs in | http://www.hkevpower.com | |

| No. | City / Country | Name Of the Case | Description | Link to the document | Illustration |
|-----|---|--|---|---|---|
| | | | Hong Kong. We promise to provide a convenient, safe and cost-effective charging solution for all EV drivers and various companies. | | |
| 16 | Australia | Global Charging Infrastructure Market | As global warming increasingly affects the lives of billions of people around the world, countries, regions, or states are looking to accelerate the transition from burning fossil fuels to meet our mobility needs. The move towards zero emission vehicles - largely battery electric vehicles, must be accompanied by investment in Electric Vehicle Charging Infrastructure (EVCI). | https://connect.arcadis.com/global-charging-infrastructure-market-report?origin_source=google&origin_medium=search_ad&origin_campaign=evci22&origin_content=NoData |  |
| 17 | Canada | Incentives for purchasing zero-emission vehicles | We know that the higher upfront purchase cost of zero-emission vehicles (ZEVs) can make it more difficult to adopt this clean technology. The Incentives for Zero-Emission Vehicles (iZEV) Program and tax write-offs for businesses are helping to make it more affordable. There are two levels of incentives: Battery-electric, hydrogen fuel cell, and longer-range plug-in hybrid vehicles are eligible for up to \$5,000; longer range plug-in vehicles have an electric range equal to or greater than 50 km. Shorter range plug-in hybrid electric vehicles are eligible for up to \$2,500; shorter range plug-in vehicles have an electric range under 50 km. | https://tc.canada.ca/en/road-transportation/innovative-technologies/zero-emission-vehicles/light-duty-zero-emission-vehicles/incentives-purchasing-zero-emission-vehicles | |
| 18 | Europe: Belgium, Denmark, Finland, France, Germany, Italy, Luxembourg, Norway Spain, Sweden, The Netherlands United Kingdom | EV and EV Charger Incentives in Europe: A Complete Guide for Businesses and Individuals | Research into EV and EV charger incentives shows that national incentives and benefits for EVs and EV chargers vary greatly across Western Europe and the rest of the EU. Only 12 EU countries offer bonus payments or premiums to buyers of EVs, although most grant some kind of tax reduction or exemption for buyers and owners of EVs, for example. Faced with a mountain of research papers, interactive maps and policy reports, it can feel overwhelming to try to find information about your country's national policy. To make things easier, we've collated the major policies from a handful of Western European countries. This should help you on your way to successfully buying your future EV, EV fleet or EV charger. Simply click on your country's link below to find the right section for you. | | |

