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As at
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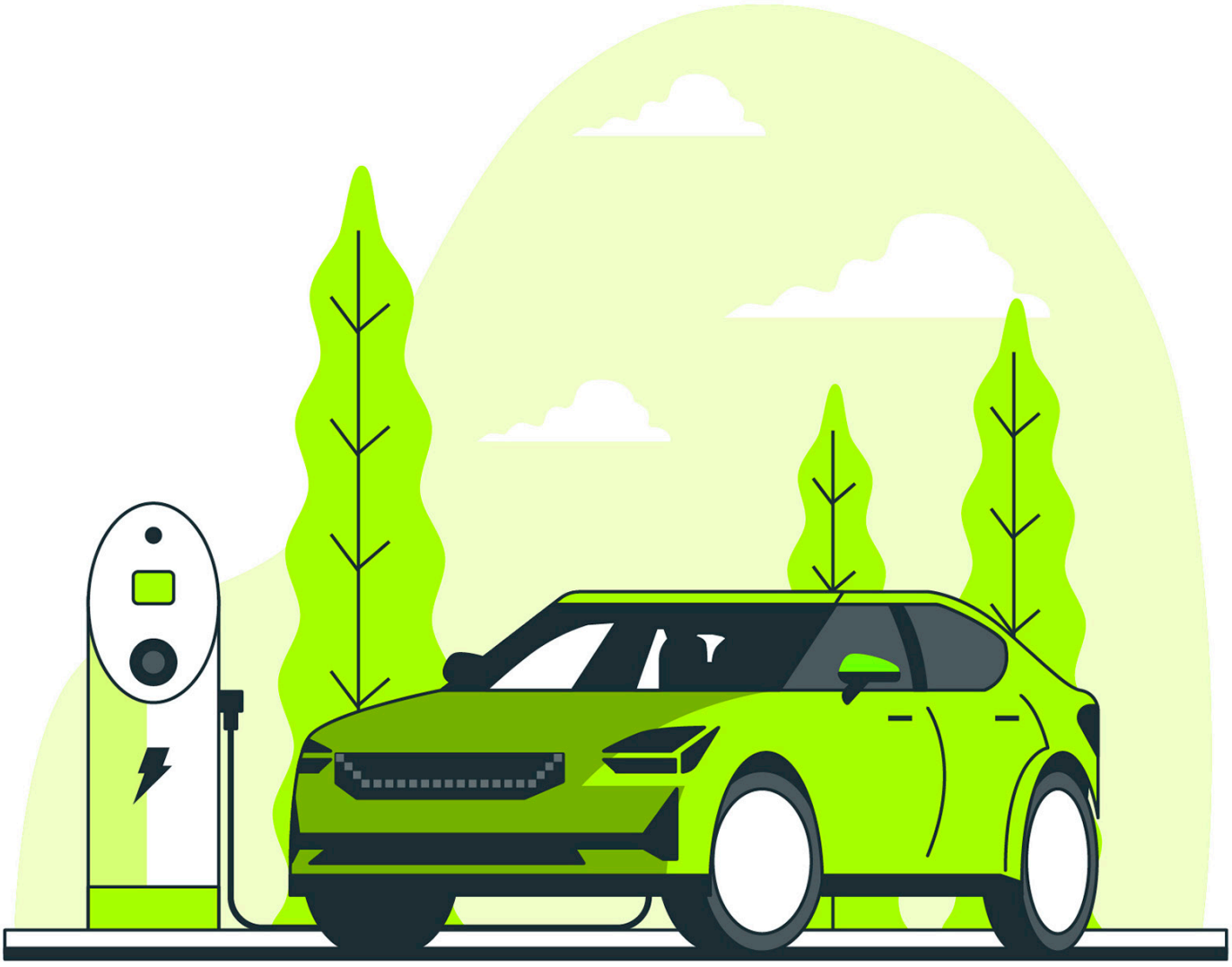
On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ).

Deloitte.

SURAT ONE EV APP



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B2B	Business-To-Business
BRT	Bus Rapid Transit
CESL	Convergence Energy Services Limited
CPO	Charge Point Operator Direct Current
CRED	Confederation of Real Estate Developers' Associations of India
DC	Direct Current
DISCOM	Distribution Company
E-2W	Electric Two-Wheeler
E-3W	Electric Three-Wheeler
E-4W	Electric Four-Wheeler
EV	Electric Vehicle
FAME	Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles
GDP	Gross Domestic Product
ICE	Internal Combustion Engine
ICCC	Integrated Command and Control Centre
IEC	Information, Education and Communication
O&M	Operations and Maintenance
PCS	Public Charging Stations
PPP	Public-Private Partnership
RTO	Regional Transport Office
SMC	Surat Municipal Corporation

Executive Summary

The Surat One EV App is envisioned as a comprehensive digital solution to streamline and enhance the electric mobility ecosystem in Surat. The app aims to consolidate services for electric vehicle (EV) users, city authorities, power distribution companies (DISCOMs) and charge point operators (CPOs) through a unified and user-centric platform.

Building on the foundation of the existing EVolute-Surat app, the One EV App aims to integrate advanced functionalities such as real-time charger availability, booking, payment processing, route planning and personalised dashboards for users. For city authorities, it intends to enable data-driven decision-making through real-time analytics, forecasting tools and key performance indicators (KPIs) aligned with the Surat EV Policy. DISCOMs would benefit from features that support dynamic tariff setting, load forecasting and renewable energy integration. CPOs would gain access to remote monitoring, infrastructure performance analytics and customer engagement tools.

The app is designed for seamless integration with the Surat Municipal Corporation (SMC) App to maximise reach and improve user experience. It would also support onboarding of stakeholders through structured frameworks including data-sharing agreements and standard operating procedures.

By bringing all EV-related services onto a single digital interface, the Surat One EV App intends to address key urban mobility challenges, improve infrastructure utilisation and support policy implementation. It would play a critical role in achieving Surat's broader objectives of sustainable, inclusive and low-emission urban transport.

01

The Role of Digital Solutions in Accelerating Electric Mobility Transition

Digital solutions are playing an increasingly pivotal role in shaping the electric mobility landscape by seamlessly connecting diverse stakeholders, facilitating real-time data exchange and enabling effective policy implementation. These solutions range from integrated applications for locating and booking charging stations, to advanced analytical tools that inform data-driven decisions on infrastructure deployment and energy management. By bringing together users, charging point operators, vehicle manufacturers and local authorities on a unified platform, digital innovations help optimise operations, enhance user experiences, and contribute to the broader goal of decarbonising the transport sector.

In India, the demand for EVs is on a notable upswing, supported by progressive governmental policies and ambitious decarbonisation targets. By leveraging mobile applications and intelligent software solutions, EV stakeholders can address key barriers such as range anxiety, unavailability of transparent data and fragmented information on subsidies and incentives. Consequently, the transition towards sustainable transport is accelerated, benefiting both the environment and the economy by reducing greenhouse gas emissions, cutting fuel import bills and fostering green job creation.

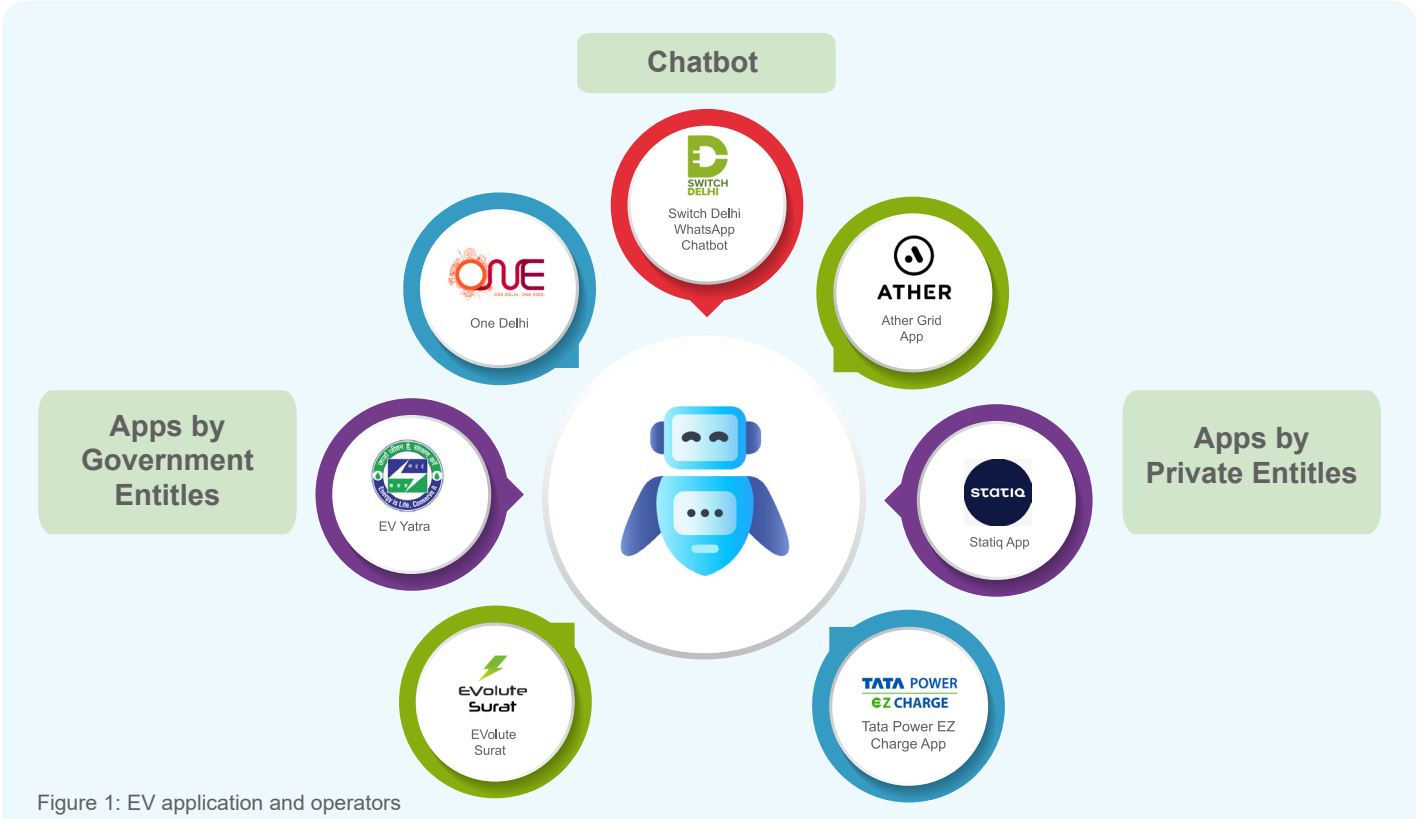


Figure 1: EV application and operators

1.1 Ecosystem of EV applications in India

The burgeoning EV sector in India has spurred the development of a diverse ecosystem of applications, designed to enhance the user experience and streamline operations. These applications can be broadly categorised into government-owned and privately-owned platforms, each playing a crucial role in the integration of different EV actors active in the EV landscape. Government initiatives have led to the creation of applications focused on public charging infrastructure management, subsidy disbursement and data collection to inform policy decisions. These platforms often provide real-time information on charging station availability, pricing, and utilisation, fostering transparency and accessibility. They serve as a vital link between the government, EV owners and infrastructure providers, facilitating the smooth implementation of national and state-level EV policies.

1.2 Overview of types of applications (government owned and privately owned)

Complementing government efforts, a vibrant ecosystem of privately-owned EV applications has emerged, catering to a wide range of consumer needs. These apps offer features such as route planning with charging station integration, personalised charging schedules, payment solutions and vehicle diagnostics. Many private applications focus on enhancing the convenience and efficiency of EV ownership, providing users with a seamless and integrated experience. From ride-sharing platforms incorporating electric fleets to apps that connect EV owners with private charging point operators, the private sector is driving innovation and competition in the EV application market. This dynamic interplay between government and private applications is essential for creating a comprehensive and user-friendly EV ecosystem in India, accelerating the adoption of sustainable transportation solutions.

1.3 Existing public charging station (PCS) applications

The landscape of PCS applications in India is diverse, with each platform offering a unique set of features and functionalities. This section provides an overview of key applications, highlighting their strengths and limitations.

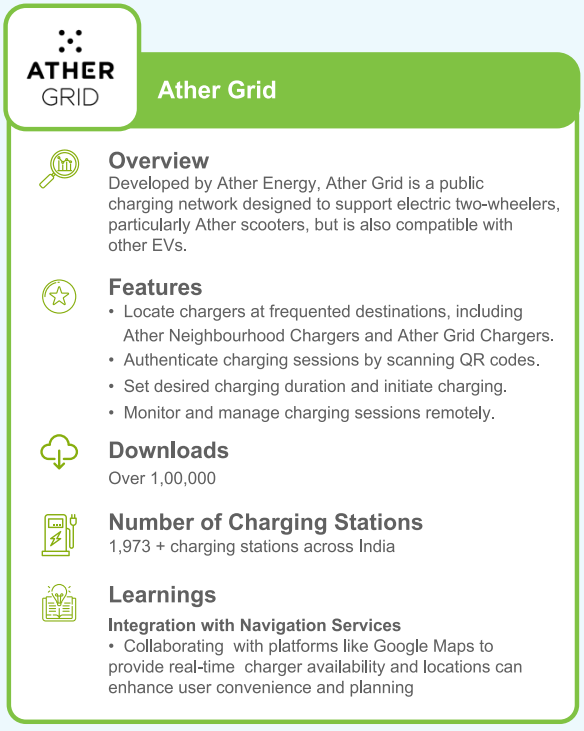


Figure 2: Features of ather grid app I Source: Ather App

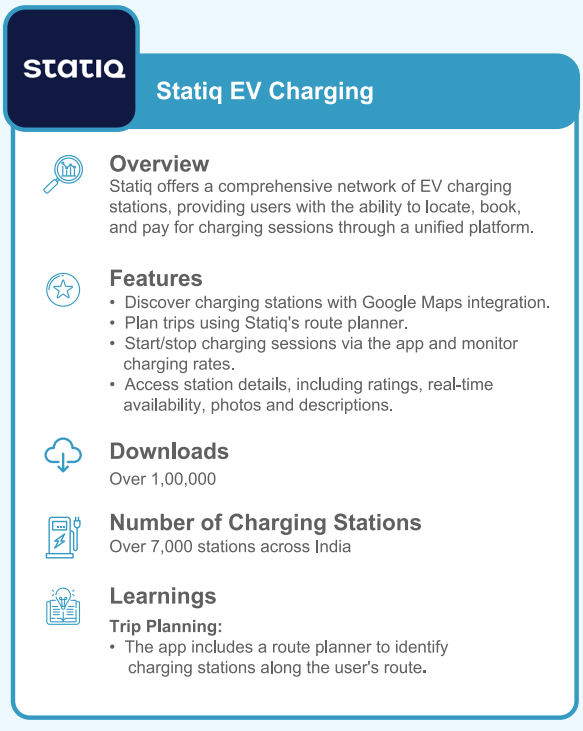


Figure 3: Features of statiq app I Source: Statiq App

Tata Power EZ Charge

Overview
Developed by Ather Energy, Ather Grid is a public charging network designed to support electric two-wheelers, particularly Ather scooters, but is also compatible with other EVs.

Features
- Locate EV charging stations within the Tata Power network. Initiate and monitor charging sessions.
- Make online payments for charging sessions.
- Access detailed instructions, terms of use, and FAQs within the app.

Downloads
Over 1,00,000

Number of Charging Stations
Over 5,500 stations across India

Learnings
EZ CHARGE Card:
- Utilises RFID technology for effortless tap-and-charge functionality.

Figure 4: Features of TATA power EZ app I Source: TATA Power EZ

EV Yatra by BEE

Overview
EV Yatra is an application that provides real-time information on public EV charging stations, including details such as GPS coordinates, charger types, slot availability, tariffs and service fees.

Features
- Provides real-time information on public EV charging stations, including GPS coordinates, charger types, slot availability, tariffs, and service fees.
- Allows users to identify and book charging slots via smartphones.
- Ensures dynamic updates for current information. Collects user feedback for continuous improvement.

Downloads
Over 1,00,000

Number of Charging Stations
Over 5000

Learnings
Trip Planning:
- Establishing a robust feedback mechanism can guide continuous improvement & user-centric feature development.

Figure 5: Features of EV Yatra app by BEE I Source: EV Yatra

One Delhi

Overview
An initiative by the Delhi Government, One Delhi integrates various transportation modes, including buses, metro, and auto-rickshaws, into a single platform to simplify urban mobility.

Features
- Provides real-time updates with live bus tracking and expected arrival times. Offers a route planner visualizing bus and metro routes on a map.
- Enables purchase of bus and metro QR tickets directly through the app, with a 10% discount on bus fares.
- Allows users to search for parking availability near metro stations.

Downloads
Over 1,00,000

Number of Charging Stations
Over 5,500 stations across India

Learnings
Trip Planning:
- Incorporating public transportation information can provide users with holistic travel solutions, complementing EV usage.

Figure 6: Features of one Delhi app I Source: One Delhi App

1.4 Comparison of application features

Following the overviews, a detailed comparison of application features has been provided in the table below, allowing for a clear and concise overview of each platform's capabilities.

Feature	Ather Grid	Statiq EV Charging	Tata Power EZ Charge	EV Yatra	One Delhi	EVolute Surat
Find Nearby Chargers	✓	✓	✓	✓	✗	✓
Book Charging Session	✗	✓	✓	✓	✗	✓
In-App Payment	✓	✓	✓	✗	✓	✓
Real-Time Updates on Availability	✓	✓	✓	✓	✗	✓
Route Planning	✗	✓	✗	✗	✓	✗
View Charger Ratings	✗	✓	✗	✗	✗	✗
Save Favourite / Preferred Chargers	(previously used chargers)	✓	✓	✓	✗	✓
Additional features	Minimal	Minimal	Video Tutorials, FAQs	TCO Calculator, EV News	Public Transport Integration	Booking, Cancellation History, QR Scan
App Rating (Play Store)	3.1 / 5	3.8 / 5	4.6 / 5	2.4 / 5	3.3 / 5	2.6 / 5
Downloads	1,00,000+	1,00,000+	1,00,000+	5,000+	10,00,000+	5,000+
Legend	✓ Available			✗ Not available	Similar feature is available	

Figure 7: Comparative analysis of the applications

As evident from the comparison among different charging applications, while EVolute-Surat app has most features, there is a need to strengthen several features. Features like route planning and charger ratings need to be accommodated in the application to ensure greater usability among EV users. Further, an overall user experience needs to be enhanced to improve app ratings.

02

Electric Mobility Landscape in Surat

India, like many other countries around the world, is targeting electrification of its transport sector to contribute towards its decarbonisation targets and achieve net-zero emission by 2070. The national government is spearheading the transformation by announcing range of enabling policies, regulations, and guidelines for creation of conducive ecosystem for EV adoption. This culminated into a remarkable EV stock of 5 million plus vehicles as of February 2025[1].

Surat, the diamond city of India is observed to mirror the national growth trend of EV adoption. The city is actively driving transformation by introducing range of innovative initiatives. Surat

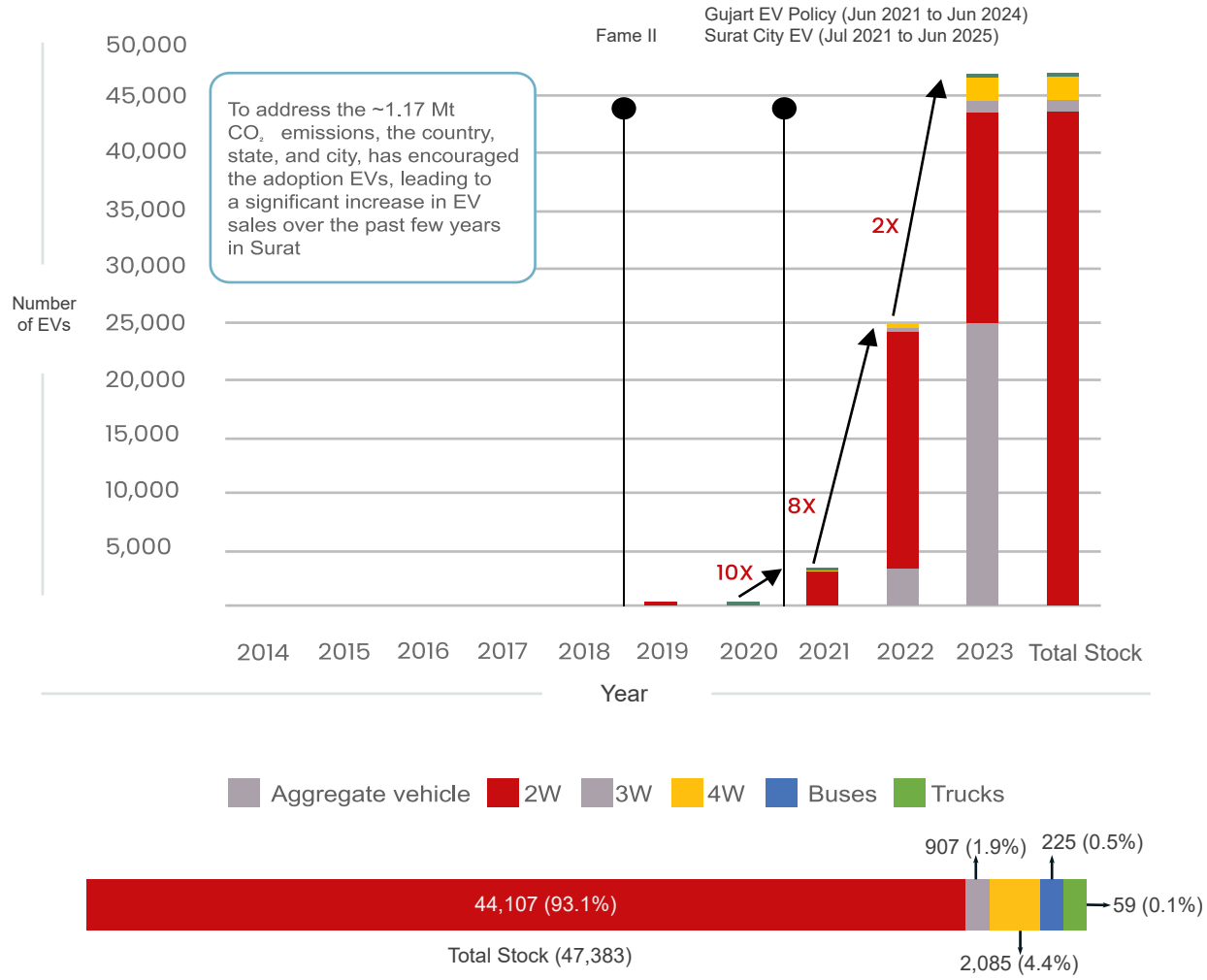


Figure 8: EV registration trend in Surat

[1] Vahan Dashboard

introduced Surat EV policy in 2021, offering range of benefits to EV users and service providers. It was a step taken to reinforce the commitment towards decarbonising the transport sector.

The Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME-II) policy led to a remarkable 10 times increase in EV adoption between 2019 and 2020. In 2022, the Gujarat state and Surat city EV policy coupled with FAME-II led to 8 times increase in EV adoption compared to 2021. The culmination of the efforts was seen in the form of a remarkable increase in the adoption of EVs over the past few years.

As of 5 July 2024, 56,458[2] EVs have been registered in Surat. This growth is indicative of a broader shift towards cleaner, more sustainable transportation options. E-2Ws make up roughly 95% of the total EVs on the road in 2023. This significant growth can be attributed to affordability, convenience for short urban commutes and relatively lower cost of ownership compared to their ICE counterparts. SMC has implemented various other innovative pilot initiatives such as 30% electrification of door-to-door solid waste collection vehicles and adoption of 450 e-buses with the public bus fleet to further accelerate EV adoption.

To support the city's growing EV adoption, SMC has established a network of 50 fast charging stations across the city to support EV operations. These stations are strategically located to ensure accessibility and convenience for EV users. Additionally, there are 37 privately owned charging stations situated across various commercial establishments.

Ensuring ease of access to charging infrastructure for EV users in Surat, SMC has leveraged the power of digital tools by developing 'EVolute-Surat' app, a localised platform facilitating discovery, booking and payments of charging stations owned by SMC.

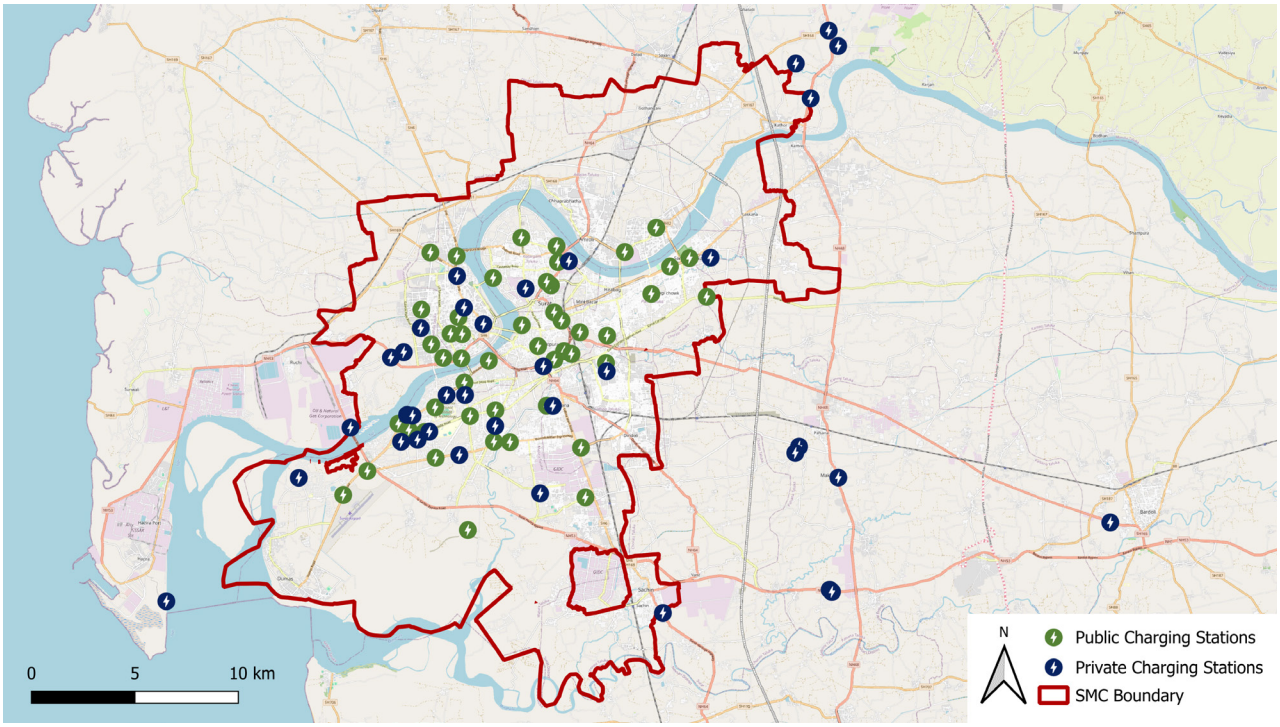


Figure 9: EV charging infrastructure in Surat | Source: BEE and SMC

"Disclaimer: This geographical map is for informational purposes only and does not constitute recognition of international boundaries or regions; GIZ makes no claims concerning the validity, accuracy or completeness of the maps nor assumes any liability resulting from the use of the information therein.

[2] Vahan Dashboard

03

Surat's Evolute App

3.1 Introduction of the evolute App

EVolute is India's first unmanned, fully automated open charging network for EVs, developed by the SMC. The EVolute mobile application facilitates EV drivers in locating charging stations, booking sessions online, and managing the charging process seamlessly.

3.2 Application framework

The EVolute app is designed to provide a user-friendly interface for EV drivers, offering functionalities such as real-time station availability, reservation systems, and various payment options. It is available for both Android and iOS platforms, ensuring accessibility for a wide range of users.

3.3 Core features and functionalities

- **Map integration:** Users can locate EVolute charging stations using an interactive map feature.
- **Real-time availability:** The app displays the current availability status of charging stations, allowing users to identify open spots.
- **Reservation system:** Users have the option to book charging slots in advance, securing a spot and minimising wait times.
- **Immediate charging:** For walk-in EV drivers, the app supports immediate charging sessions without prior booking.
- **Flexible payment options:** The app accommodates various payment methods, including wallets, credit/debit cards, and net banking, facilitating a smooth transaction process.
- **Favourite spots:** Users can save preferred charging stations for quick access in future sessions.

3.4 Strengths of the application

- **User-centric design:** The app's intuitive interface and comprehensive features cater to the diverse needs of EV drivers, enhancing user experience.
- **Comprehensive features:** The combination of real-time availability, reservation capabilities, and multiple payment options addresses common challenges faced by EV users.
- **Accessibility:** Availability on both major mobile platforms ensures that a broad user base can utilise the app's services.

3.5 Opportunities for enhancement

- **User feedback mechanism:** Implementing a robust feedback system within the app would allow users to report issues and suggest improvements, facilitating continuous enhancement of services.

- **Direct payment options:** Implementing direct payment methods, such as UPI, debit card, credit card and net banking can simplify the payment process. Users can authenticate and pay for charging sessions without the need for pre-loaded wallets.

- **Route planning integration:** Incorporating a route planning feature can significantly enhance the user experience by allowing EV drivers to map out their journeys with optimised charging stops. This functionality can alleviate range anxiety and ensure efficient trip planning.

- **Integration of private chargers into the EVolute network:** Expanding the EVolute app to incorporate private EV chargers can significantly enhance charging accessibility for users. This integration allows private charger owners, such as businesses, to share their charging stations with the public, optimising the utilisation of existing infrastructure. By enabling private charger listings, EVolute can provide users with more charging options, reduce range anxiety, and promote community engagement in supporting EV adoption.

04

Surat One EV App

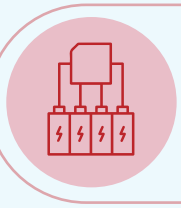
4.1 Concept

The One EV App is envisioned as a comprehensive platform designed to serve various stakeholders within the Surat EV ecosystem. This app aims to provide a seamless and integrated experience for EV stakeholders i.e. EV users, EV operators, Charging Point Operators (CPOs), power distribution companies (DISCOMs) and city authorities. By consolidating various functionalities and data points, the Surat One EV App will enhance user experience, streamline operations and support data-driven decision-making. The app will create a unified interface with stakeholder-specific interfaces to simplify the decision-making for different stakeholders, making it more accessible and efficient for all involved parties.

4.2 Key features and functionality

4.2.1 Enhanced experience and customisation for EV users

Surat One EV App is designed to provide an exceptional user experience by integrating a wide range of features that cater to the diverse needs of EV users. It will offer seamless access to charging infrastructure across Surat, allowing users to locate and book charging stations in advance. The app will also provide detailed information on connector types/charging standard, status of their availability, tariffs and in-app payment options, along with a personalised dashboard that will highlight key metrics such as carbon dioxide emission savings and energy consumption. Additionally, users will be able to access information on nearby amenities, nearby EV maintenance centres, public transport options and essential facilities, making trip planning more convenient. The app will also include a built-in monitoring system for EV and battery health, real-time updates on charging station availability and a rating system for public charging stations. Overall, the app will cater to the diverse needs of the EV users. Following is the detailed list of features proposed in the app:



Integrated charging infrastructure availability:
Users will be able to access charging infrastructure across India (via EV Yatra App) and book stations prior for off-vehicle time planning. The app will feature wallets and subscription plans for frequent users

Charging infrastructure & integrated route planning:
The app will provide connector information, contact details, location photos, tariffs, in-app payment details and route planning for seamless charging

List of EV policy incentives & benefits:

The app will help users understand and avail incentive and benefits under various schemes, helping increase app usage and click-through.

Facilities, amenities and nearby public transport:

Users may access details on nearby amenities (mechanics, theatres, malls, toilets), transport options (bus/railway stations), and facilities like police stations or hospitals

Rating for PCS:

Each charging station will have ratings, allowing users to decide between stations. Filters for selecting PCSs based on amenities will be provided to encourage competition among CPOs

EV and battery-health monitoring system:

Users will have access to general EV and battery-health related monitoring system built-in the app to persuade users to visit the app

Integrated on-road service , maintenance and battery replacement helplines:

Users will be able to book on-road assistance, yearly maintenance services, and battery replacements app to enable holistic use of the app

TCO calculator:

The app would enable end-to-end onboarding of users. Potential customers of EVs will be able to check the viability of using EVs and experience EV ecosystem prior to their purchase

SOS services:

The app will provide direct contact with emergency services, real-time location sharing with designated emergency contacts, and an integrated help button for instant assistance to ensure quick response during emergencies and enhance user safety

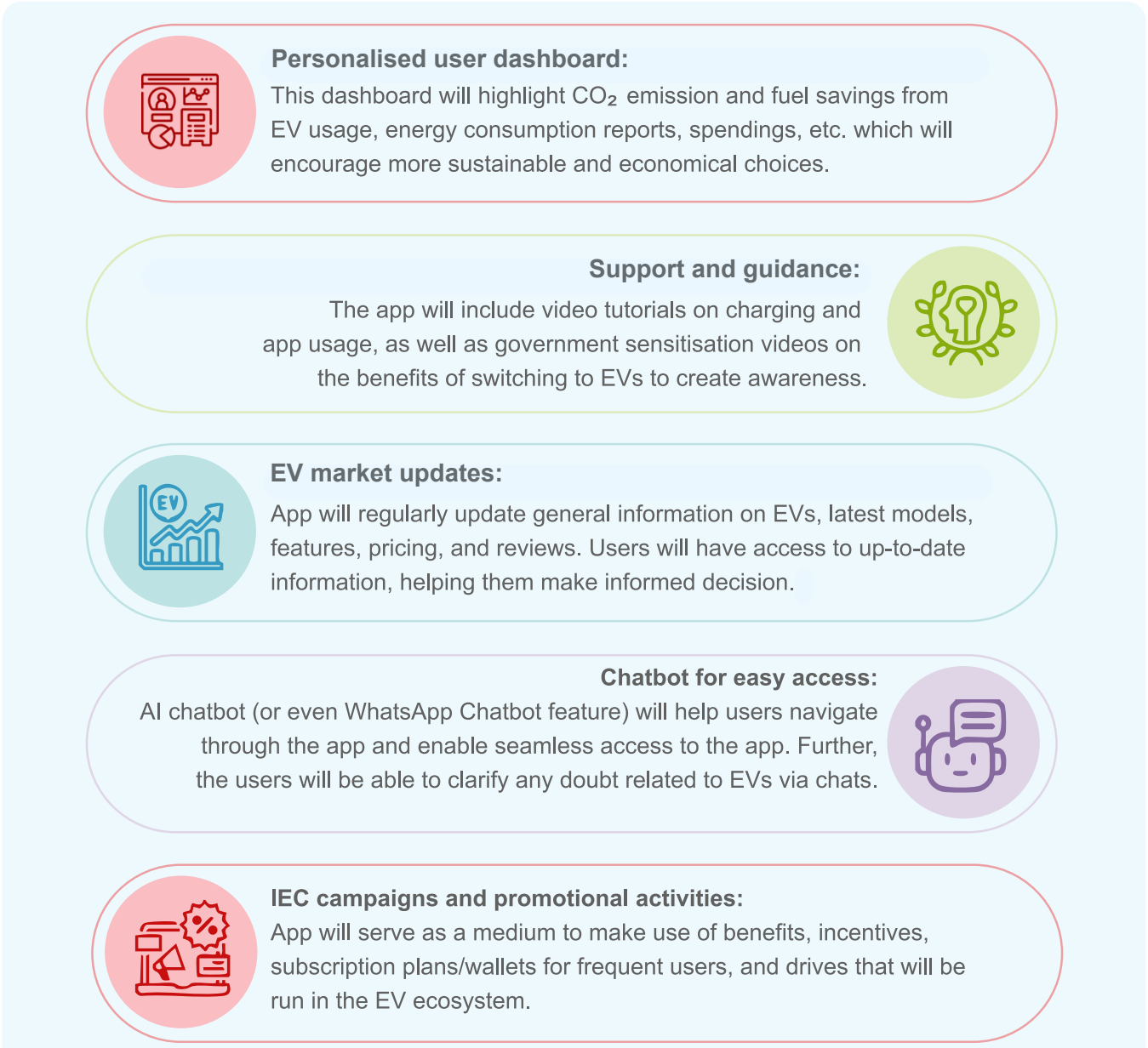


Figure 10: Features for EV users

4.2.2 Integration of decision-making tools for SMC officials

Surat One EV App is tailored to meet the specific needs of SMC officials by providing comprehensive, data-driven insights of EV adoption, sales trends and infrastructure demand. It will facilitate analytics-driven policy making, enabling policymakers to plan and implement effective EV policies based on robust data analysis. The app will offer real-time usage data to improve the charging infrastructure management, along with proactive maintenance reminders for charging stations and predictive modelling to forecast future EVs and charging demand. Additionally, it will help track progress towards Surat EV policy targets, providing detailed EV adoption data and forecasts to support SMC's sustainability goals. The app will also monitor the performance of CPOs to track statutory compliance while incorporating users' feedback, driving continuous service improvements. Integration with various mobility services will enhance urban planning and mobility management, while customised reminders and an intuitive chatbot will facilitate rapid access to critical information. The app may also serve as a platform for Information, Education and Communication (IEC) campaigns and promotional activities, enabling SMC to effectively communicate with and engage the EV user community. Following is the detailed list of features proposed in the app:

EV adoption and penetration across vehicle segments:

The app will help analyse EV adoption and EV penetration trends in the city vis-à-vis ICE vehicles to help assess transport electrification and policy implementation.

EV sales trends and forecast:

SMC will be able to analyse EV Sales trends and achievement of targets over time with due forecasts under various scenarios, enabling better KPI monitoring and planning.

Analytics-based EV policy making:

SMC will have access to end-to-end data on EV adoption, sales, penetration, energy consumption, usage patterns and future forecasts. The app and its tools will help tailor EV policies.

Charging infrastructure demand assessment:

Users' charging infra usage data, with daily reports and heatmaps, will highlight demand areas by vehicle type. This will enable SMC to assess surges, plan for their mitigation and/or plan for new charging stations

Maintenance and space planning for charging infrastructure:

The app will enable regular notifications and pings for routine maintenance planning. Further app will help space planning according to maintenance schedules and ongoing charging.

Forecasting charging infrastructure demand:

Based on charging infrastructure demand, EV adoption, EV clusters, and power availability, SMC will be able to forecast potential charging station locations across city basis demand.

Customised reminders on EV-allied activities :

Users are currently receiving reminders and general information about SMC's charging stations via SMS. App will help ease the process with push notifications.

Correlation with net-zero target:

The objective of EV adoption is to reduce emissions. The adoption of EV should help city assess its performance vis-à-vis net-zero targets. App will help assess the same with forecasts.

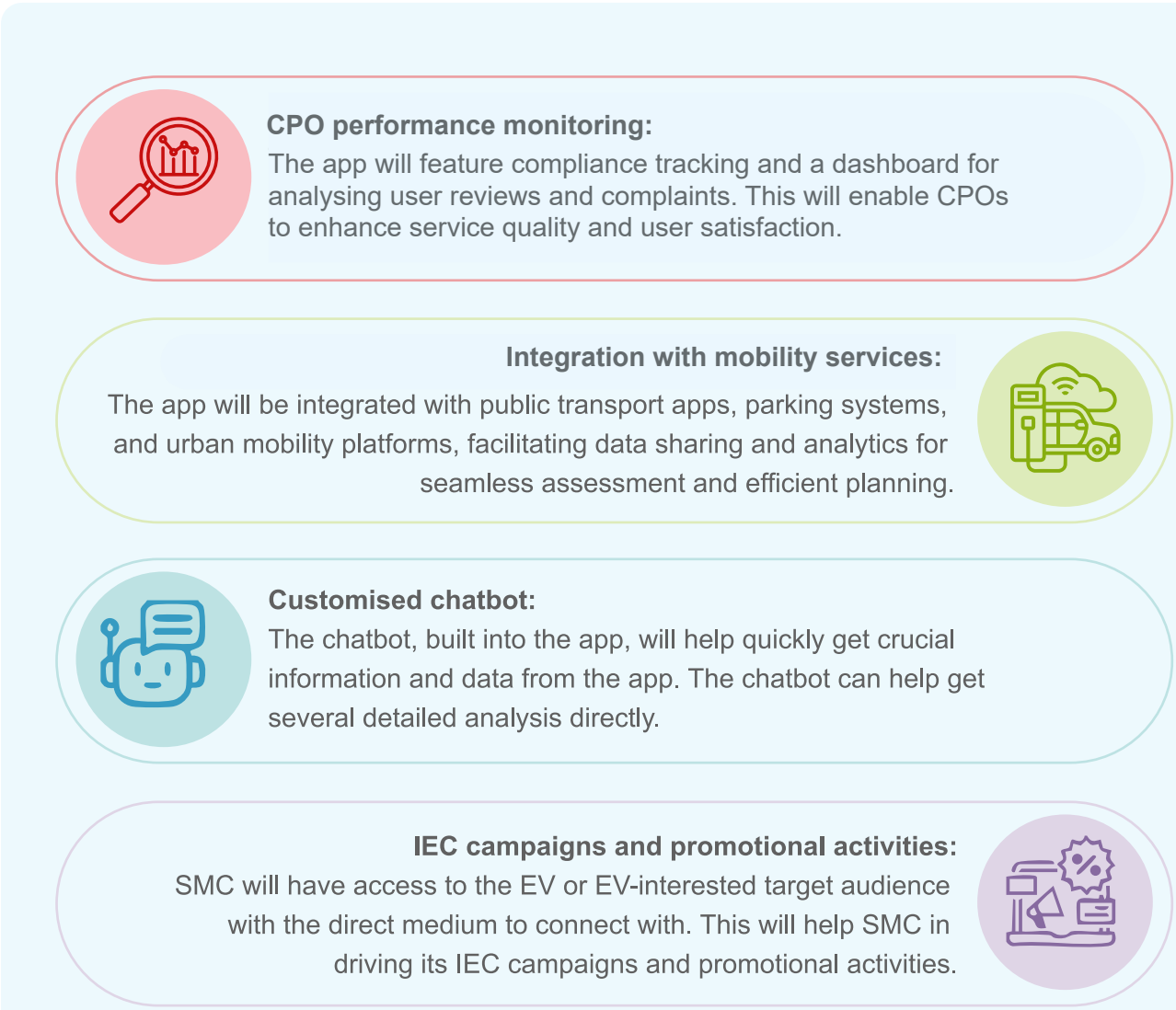


Figure 11: Features for SMC

4.2.3 DISCOM data integration and management

Surat One EV App will offer comprehensive features for DISCOMs, ensuring efficient grid planning and energy management. It intends to enable forecasting of EV-specific power demand, allowing for improved grid planning and management. By analysing charging station usage patterns and predicting home charging demand, the app will facilitate better grid management and energy planning during peak and off-peak hours. Real-time information on renewable energy integration will help reduce emissions. Dynamic tariff setting will be a key feature, improving grid stability, reducing energy costs for users, optimising infrastructure utilisation and increasing renewable energy integration. The app will streamline operations through a centralised and user-friendly interface, making it easier to manage charging infrastructure demand. Further, by identifying demand clusters, the app will optimise charging infrastructure, improve demand forecasting and enhance the overall user experience. Advanced energy management features such as Vehicle-to-Grid (V2G), smart charging, RE-integration and net-metering will also enhance grid stability and energy efficiency. Additionally, the app will support predictive grid management, improving grid reliability and optimising resource allocation. Overall, the One EV App aims to provide comprehensive tools for DISCOMs to manage the growing demand for EV charging and support the transition to a sustainable energy future. Following is the detailed list of features proposed in the app:

EV power demand assessment and prediction:

The app will help analyse power demand specific to EVs in the city to better help assess the power demand exclusively from EVs with predictive capabilities and scenario-planning.

Peak and off-peak hour assessment and prediction:

App will help assess peak and off-peak hour usage of charging stations. Further, with analytics, the EVs home charging may be predicted for better energy planning.

Renewable energy integration information in real-time

Energy planning aided by the app will help assess integration of renewable energy, conveying the same information to users for informed citizenry.

Dynamic tariff setting:

Dynamic tariffs, modifying charging rates based on demand and time, will help smoothen and optimise PCS usage by EV users. Current static tariffs may not be suitable for optimal charging infastructure usage.

Charging infastructure demand management:

The app will show availability, operation, Energy usage and maintenance requirement all in a single interface, helping charge point operators to manage their charging infastructure via single interface.

Identification of demand clusters:

EV Users are likely to be spread across the city in cluster. Identification of these cluster is necessary to detect locations of potential charging stations accross city to manage demand.

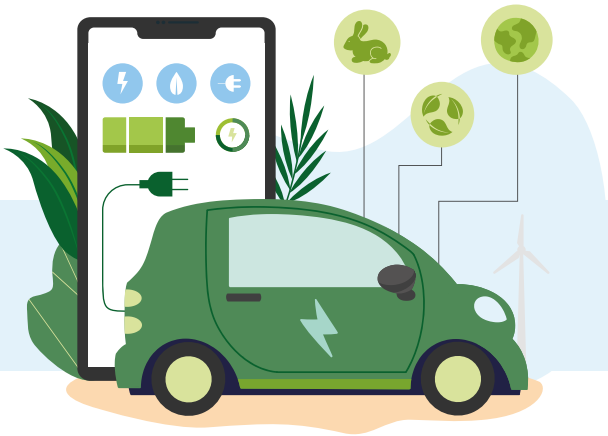
Advanced energy management:
The app will enable V2G tools, smart charging, and net-metering for renewable energy. These features will improve energy efficiency, sustainabillity, and offer cost savings and reliable supply.

Grid load management:
This feature will offer real-time monitoring of grid load from charging stations and generates alerts for potential overloading. This ensures efficient grid operation and prevents disruptions during peak demand.

Figure 12: Features for DISCOMs

4.2.4 Charging station integration and management

Surat One EV App intends to provide a robust platform for CPOs to efficiently manage their operations and enhance service delivery. It will help assess the demand for value-added services and amenities, such as mechanics and toilets, offering these at a cost to improve user convenience and satisfaction. The app will also enable energy storage and backup demand assessment, supporting augmented charging points with backup power sources and energy storage solutions for swapping stations. Charger management will be streamlined through the app, allowing CPOs to remotely operate start/stop functions, perform diagnostics and schedule preventive maintenance tasks, ensuring that charging stations remain operational and efficient. Comprehensive multi-lingual support and real-time dashboards will track usage, revenue and performance metrics, providing detailed insights into energy usage patterns. A customised chatbot will facilitate quick access to crucial information and data, enabling CPOs to obtain detailed analysis directly from the app. Additionally, the app will serve as a platform for IEC campaigns and promotional activities, providing CPOs with direct access to the EV or EV-interested target audience, helping drive awareness and engagement. Overall, Surat One EV App aims to provide CPOs with the tools and insights needed to optimise their operations and deliver superior service to EV users. Following are some of the features proposed in the app for charging station management:



Value-added services and amenities demand assessment:
The operators will be providing the value-added services such as mechanics and amenities such as toilets at a cost. The app would help assess demand.

Energy storage and back-up demand assessment:
CPOs will have to augment PCS with back-up power sources. Also, for swapping stations, CPOs will have to plan for energy storage. App will enable analytics-based solution.

Charger management:
CPOs will have the ability to remotely operate start/stop functions and diagnostics for chargers, as well as schedule preventive maintenance tasks.

App management:
The app will provide comprehensive multi-lingual support and real-time dashboards for tracking usage, revenue, and performance metrics with detailed energy usage pattern for each station.

Customised chatbot:
The chatbot, built into the app, will help quickly get crucial information and data from the app. The chatbot can help get several detailed analysis directly.

IEC campaigns and promotional activities:
CPOs will have access to the EV or EV-interested target audience with the direct medium to connect with. This will help CPOs in driving their IEC campaigns and promotional activities.

Figure 13: Features for CPOs

4.3 Benefits and value proposition for different stakeholders

The app is designed to deliver significant benefits and value to the stakeholders within the Surat EV ecosystem, facilitating a collaborative and efficient environment. For SMC officials, the app will facilitate monitoring of EV penetration and charging station adoption, forecasting infrastructure demand, assessing CO2 saving and assessing the impact of incentives. It will support policy and vision planning through trend analysis and projections, while also addressing real-time concerns and disseminating knowledge. CPOs will benefit from the demand clusters to better manage infrastructure, integrate renewable energy and assess energy storage needs. The app will also help CPOs evaluate add-on services, monitor user experience, conduct promotions and provide customer support. EV users will enjoy the convenience of locating the nearest charging stations, checking slot availability and compatibility, calculating fees and accessing facilities information. The app will also offer grievance redressal, policy benefits and EV market information, promoting adoption and awareness. For DISCOMs, the app will enable accurate estimation of future power demand, capacity planning and management of charging infrastructure demand. It will support the integration of renewable energy, data-driven tariff setting and peak-time assessment.

Overall, the Surat One EV App will serve as a comprehensive platform that caters to the diverse needs of all stakeholders, driving the growth and sustainability of the EV ecosystem.

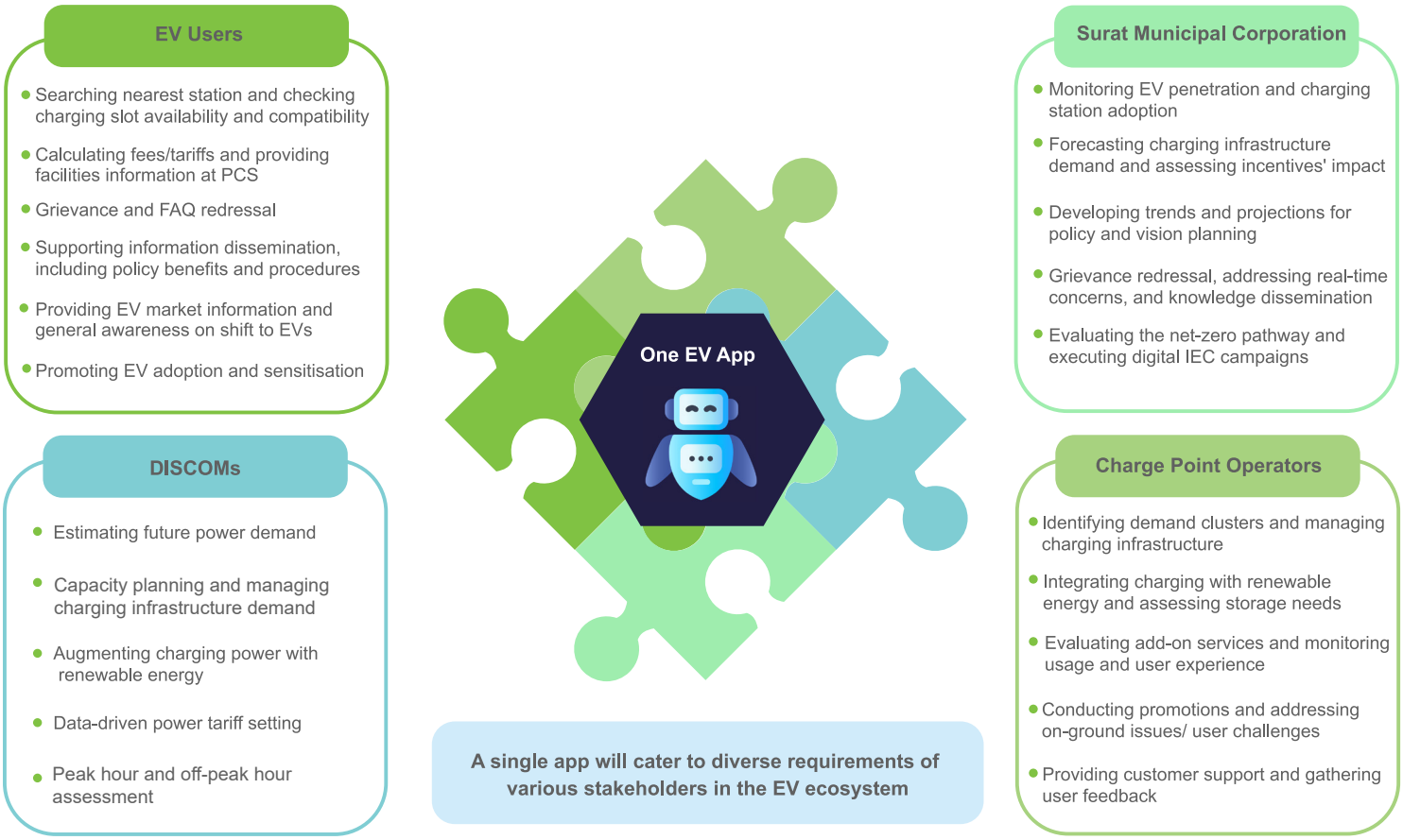


Figure 14: Multiple benefits for various stakeholders.

05

Implementation Strategy

5.1 Wireframe for One EV App

The proposed wireframe for the One EV App outlines a comprehensive and user-centric design that integrates various stakeholders and functionalities to create a seamless experience. The wireframe has been designed to accommodate all stakeholders with simultaneous contributions and benefits for the One EV App ecosystem.

The EV users register their vehicles with the Regional Transport Offices (RTOs) under the Ministry of Road Transport and Highways (MoRTH) during the purchase of EVs. This registration data, which includes details such as the location of users, type of vehicle and type of use, will be added into the Surat One EV App. Users will then register on the app which will enable them to access a range of benefits, including registration to the charging solution dashboard, payment gateway, access to the charging network and access to Battery Management Systems (BMS) and maintenance centres. Through the app, users will be able to locate the nearest charging or swapping stations, check slot availability and compatibility, view charging tariffs and access facilities at charging stations.

SMC will facilitate the onboarding of DISCOMs to the One EV App through Memorandums of Understanding (MOUs). This process will involve registration to the charging dashboard as operators, signing MOUs on data sharing, agreeing on tariff charges and setting up payment gateways for platform monetisation. DISCOMs will then establish data-sharing agreements on

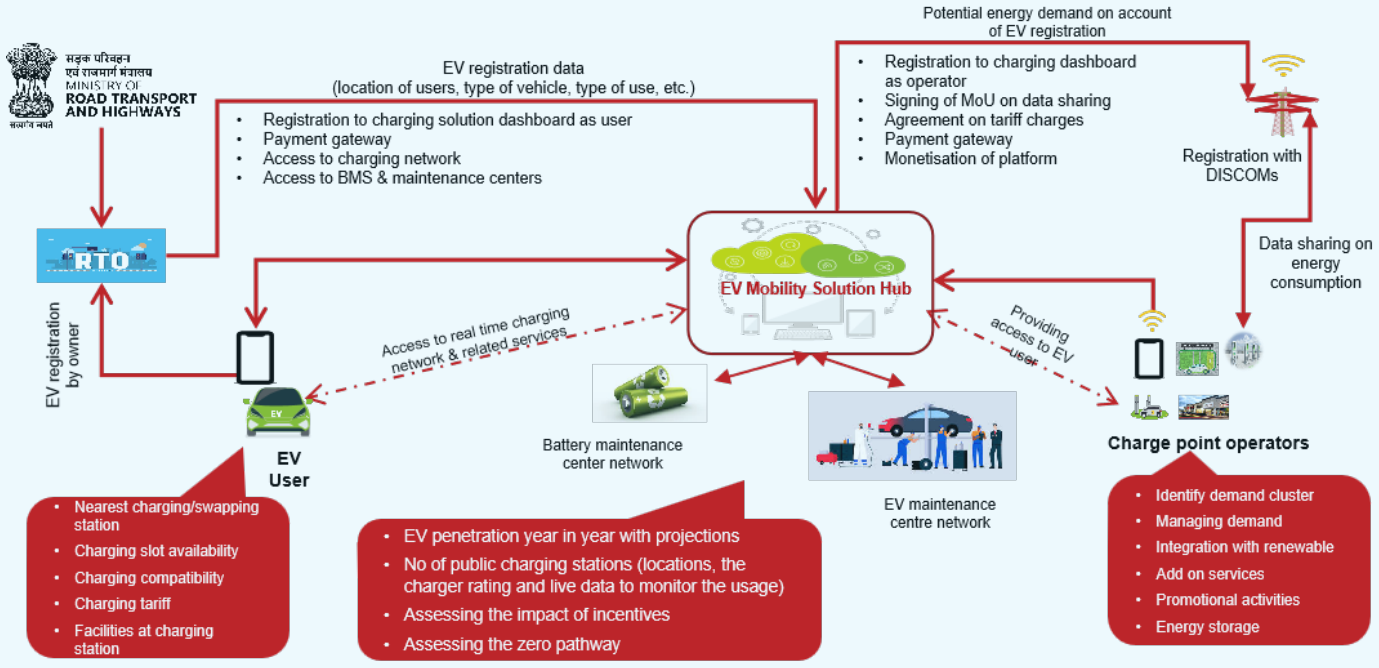


Figure 15: Wireframe for the One Ev App

energy consumption with CPOs. By onboarding to the One EV App, CPOs will gain access to EV users in the city and benefit from features such as demand cluster identification, demand management, integration with renewable energy, add-on services, promotional activities and energy storage solutions. Simultaneously, battery maintenance centres and EV maintenance centres will be onboarded, providing users with seamless access to their services.

SMC authorities will have access to high-level details such as year-on-year EV penetration projections, the number of public charging stations (including locations, charger ratings and live usage data) and assessments of the impact of incentives and the net-zero pathway. This comprehensive integration will make the Surat One EV App central to the EV ecosystem, enabling access to critical information and services for all stakeholders, including OEMs and supporting the overall growth and sustainability of electric mobility in Surat.

5.1.1 Integrating One EV App with SMC App

Integrating the Surat One EV App within the SMC App presents a strategic opportunity to enhance EV uptake and awareness among the residents of Surat. The SMC App, with over 5 lakh downloads, is the most popular app offered by the SMC, providing a wide range of services such as property tax, professional tax, birth certificates and more. By adding a link to the Surat One EV App within the SMC App, users will have easy access to EV-related services and information, leveraging the existing popularity and user base of the SMC App to promote the adoption of electric vehicles.

This integration will not only increase the visibility of the One EV App, which currently has over 5 thousand downloads as EVolute-Surat app, but also provide a seamless user experience by consolidating multiple municipal services into a single platform. Users will be able to access essential EV services, such as locating and booking charging stations, viewing charging tariffs and accessing maintenance centres, directly from the SMC App. This convenience will encourage more residents to explore and adopt electric vehicles, Additionally, the integration will facilitate better communication and engagement with the EV user community. The SMC App can feature regular updates on EV policies, incentives and market trends, keeping users informed and motivated to switch to electric vehicles. Promotional activities and IEC campaigns can be effectively conducted through the SMC App, reaching a broader audience and driving greater participation in the EV ecosystem.

Overall, the integration of the One EV App within the SMC App will create a unified platform that

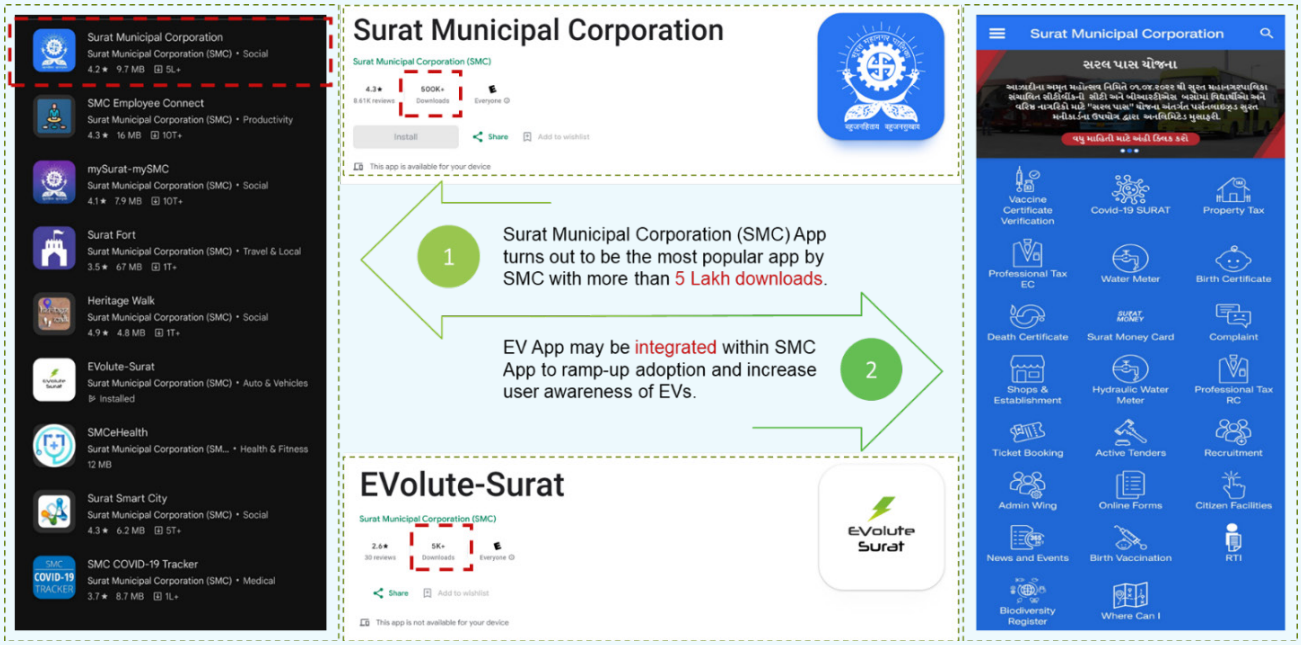


Figure 16: One EV App integration into SMC App
Source: SMC

supports the growth of electric mobility in Surat, enhances user convenience and promotes sustainable urban development through the SMC App, reaching a broader audience and driving greater participation in the EV ecosystem.

5.2 Payment integration within One EV App

The Surat One EV App will propose a streamlined payment process for EV users by integrating a seamless and efficient payment system. Users will be able to locate charging stations through the app and connect their EVs to the selected PCS. Once the charging session is complete, the app will display the final amount due. Users can then scan a QR code on the PCS to initiate the payment process. The One EV App will store the charging data for analysis and forward users to the respective payment gateways of the CPOs. This integration ensures that users are directed to the appropriate payment platforms, facilitating smooth and secure transactions. By centralising the payment process within the app, users will benefit from a convenient and hassle-free experience, while the app collects valuable data for further analysis and optimisation of the EV ecosystem.

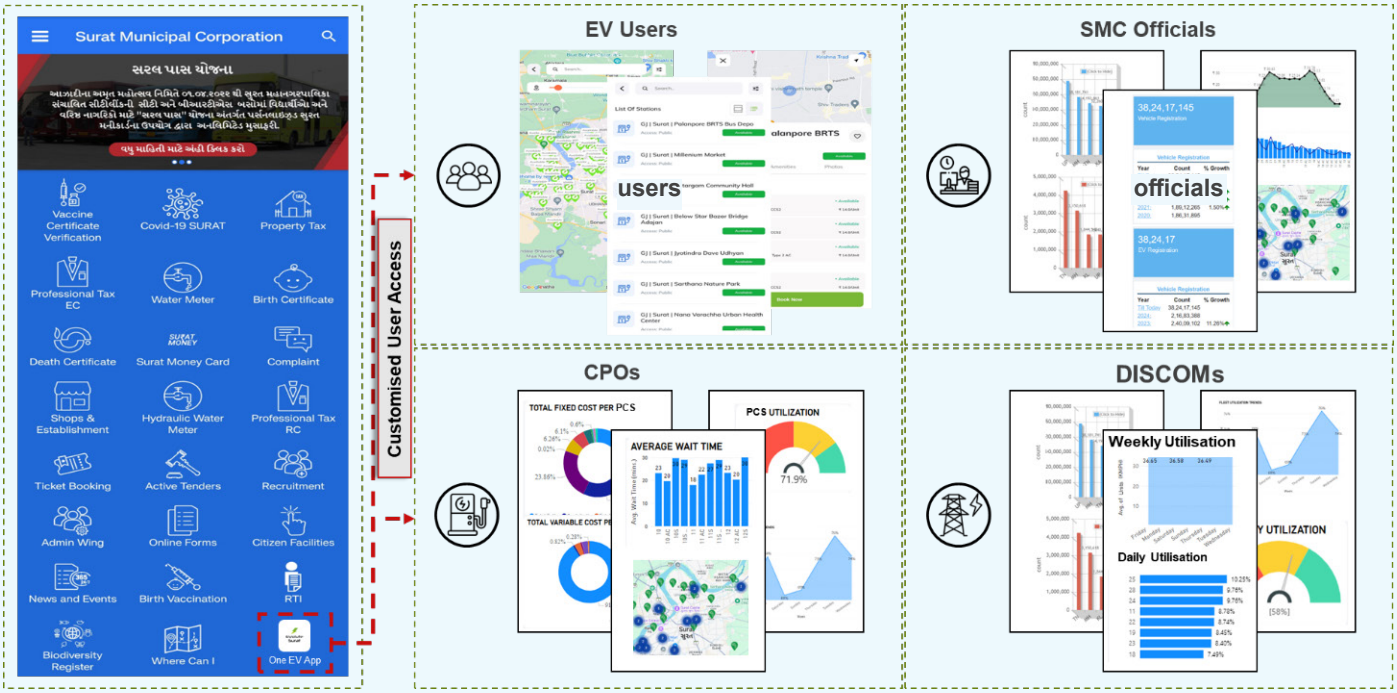


Figure 17: One EV App integration into SMC App
Source: SMC App, Evolute App, GIZ Analysis

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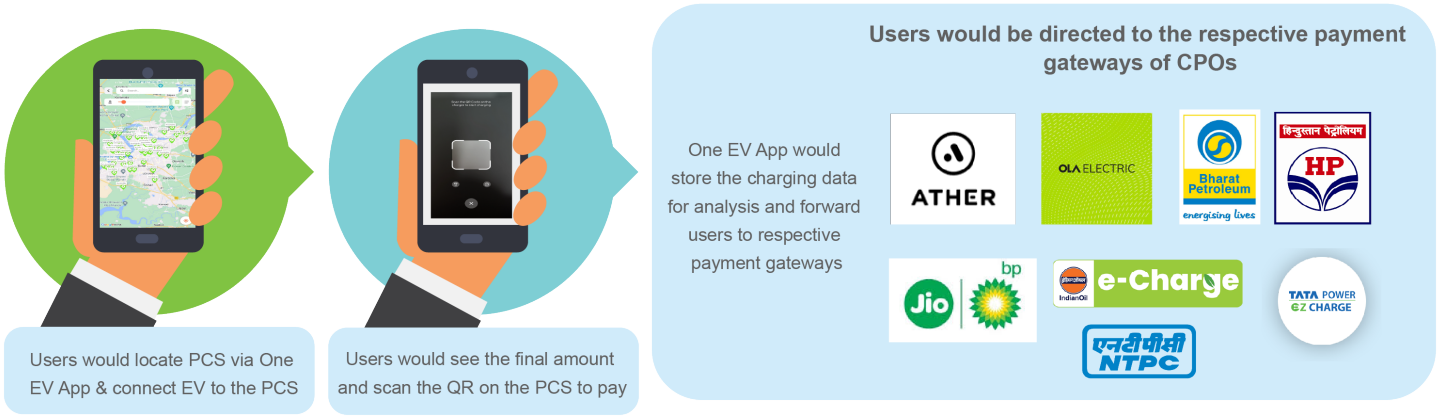

Figure 18: Payment integration in One EV App

Source: SMC App, Evolute App, GIZ Analysis

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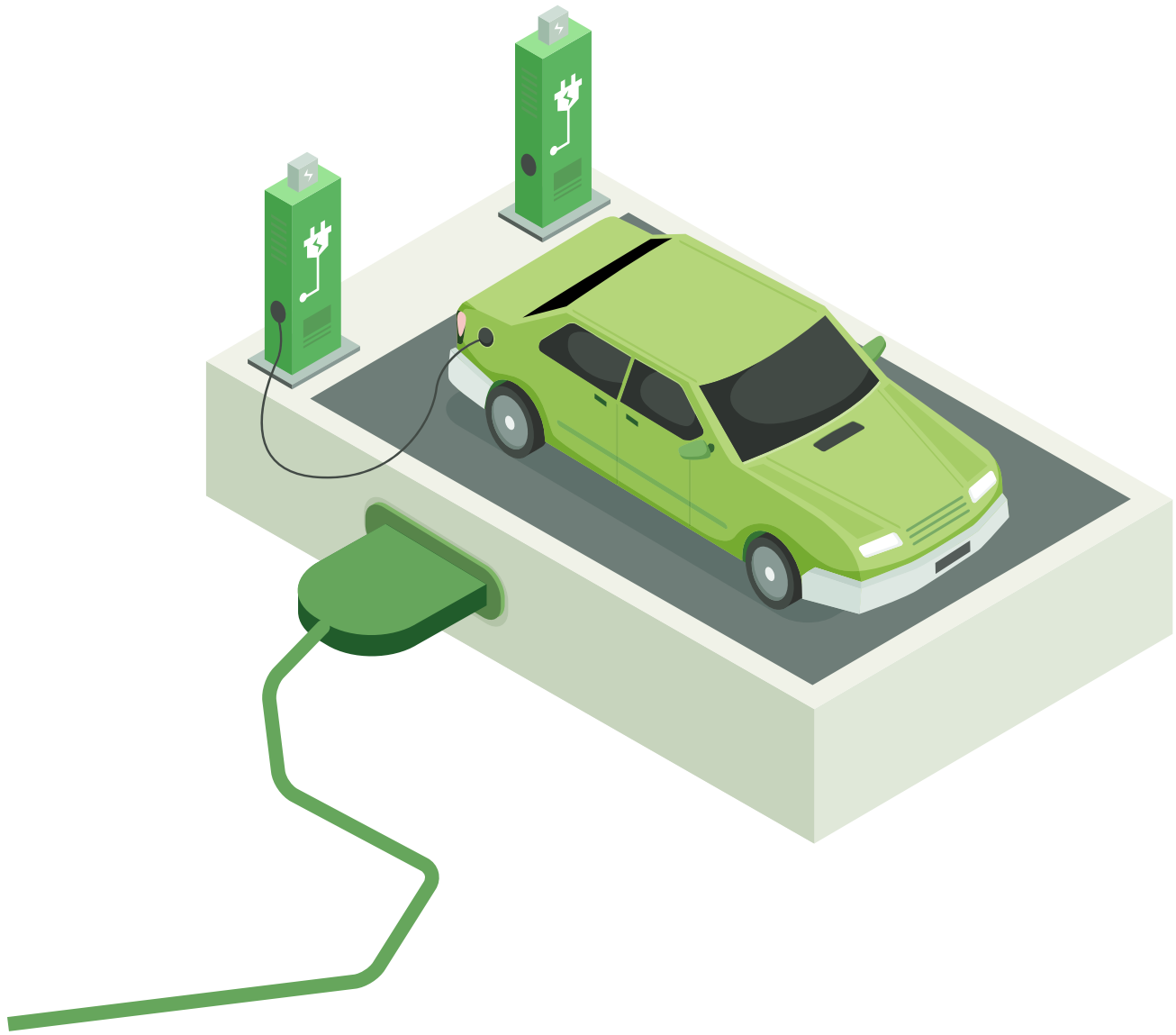

06

Data Analytics and Reporting Framework

Robust data analytics and reporting framework is essential for the “Surat One EV App” to effectively track performance, inform decision-making and optimise the EV ecosystem. This framework will encompass Key Performance Indicators (KPIs), data visualisation and reporting tools and a process for regular performance evaluation and optimisation.

6.1 Data visualisation and reporting tools

To effectively present and analyse the collected data, the framework will utilise advanced data visualisation and reporting tools. These tools will provide timely and actionable information to stakeholders for several functions.

The functions will enable SMC, DISCOMs and CPOs to establish a systematic framework for regular performance evaluation and optimisation. The framework will comprise of the below steps:

- Periodic review of KPIs and data analysis
- Identification of areas for improvement and optimisation
- Implementation of data-driven changes to the app and the EV ecosystem
- Continuous monitoring of the impact of implemented changes
- Gathering of user feedback and incorporating that feedback into the app

This provision in the “Surat One EV App” will be a valuable tool for steering adoption of electric mobility in line with city’s sustainability goals.

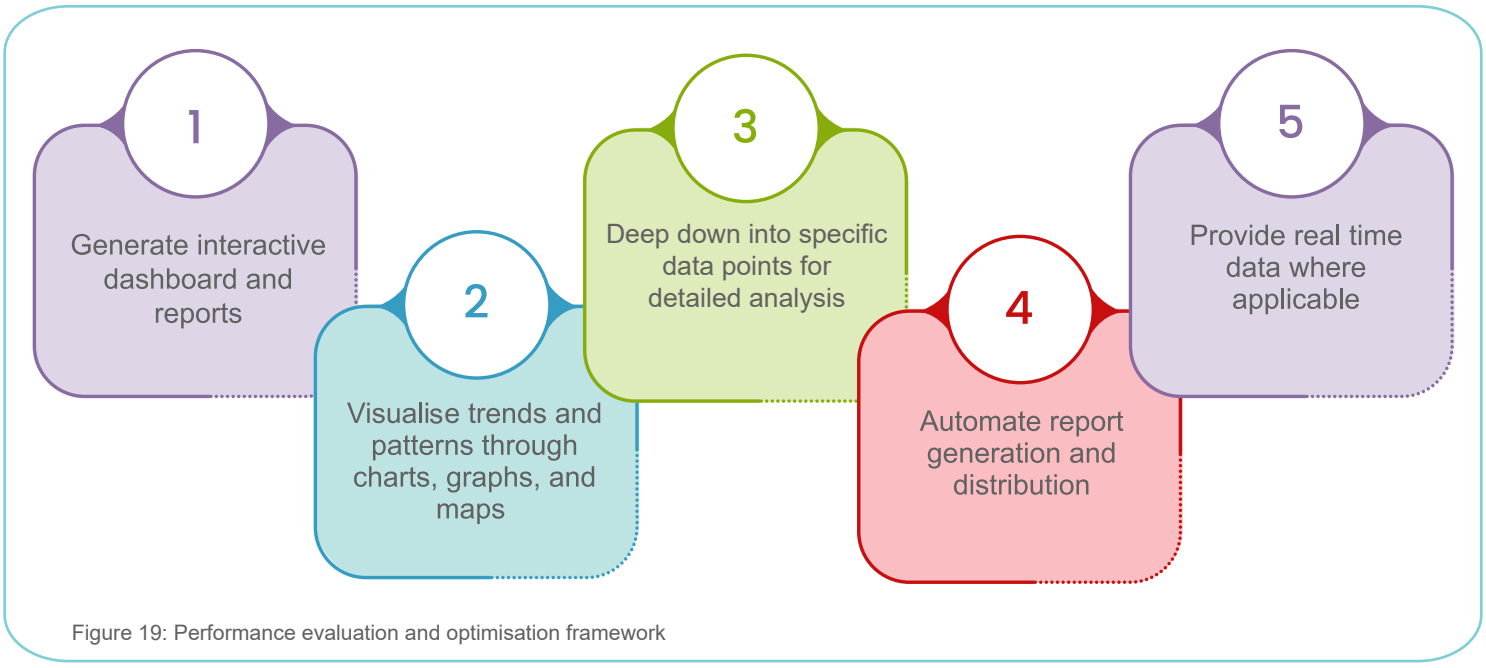

Figure 19: Performance evaluation and optimisation framework

6.2 Key Performance Indicators (KPIs)

The datasets available in the One EV App will be leveraged through real time analytics for continuous monitoring and improvement of the e-mobility ecosystem of the city. Comprehensive set of KPIs will be identified and showcased on the decision maker interface to enable data-driven and evidence-based decision making. These KPIs will provide valuable insights into the app's performance and the progress of electric mobility adoption in Surat.

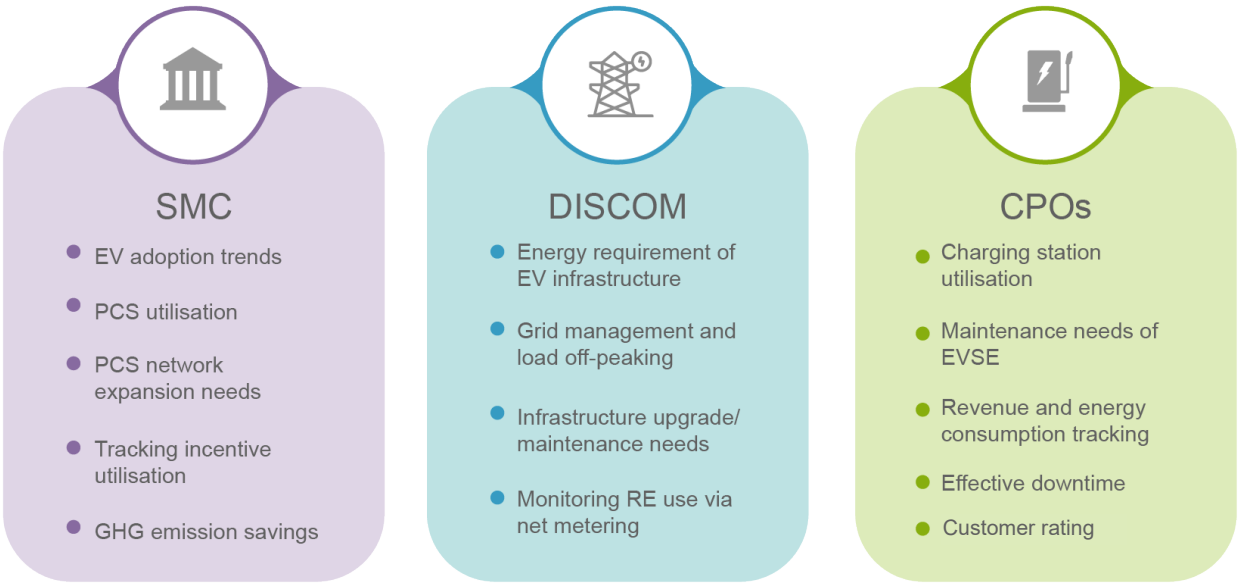

Figure 20: Different KPIs for valuable performance insights

6.3 Data-driven decision making for optimising Surat's EV ecosystem

The KPIs identified will be beneficial for the stakeholders to undertake a systematic, evidence-based decision-making approach to advance e-mobility uptake in the city.

- SMC will be able to actively track EV uptake trend, expansion of EV charging network, disbursement of policy benefits and overall impact on the GHG reduction. These KPIs will empower SMC to monitor status of policy implementation, progress of achieving the policy targets. Based on the findings from the data, SMC will be able to introduce amendments in the initiatives or any course correction required to ensure achievement of the e-mobility targets.
- As EVs heavily depend on the electricity grid for charging, the electricity demand pattern of the city will evolve with increasing EV adoption. DISCOMs will be able to monitor the fitness of the distribution grid in Surat, model future energy demand, anticipate any impact on the grid due to peak hour demand, and monitor the use of RE via net metering. The KPIs will be crucial for introducing dynamic charging tariffs, ensuring grid readiness and availability of good quality and uninterrupted electricity for EV charging.
- CPOs will be able to evaluate performance of the charging stations immediately through the identified KPIs. This will enable them to maximise the revenue by offering enhanced customer experience. They may also use the KPIs to understand the future expansion possibilities within the city.

07

Way Forward

The ‘Surat One EV App’ proposed is a one stop solution for decision makers and users due to integration of key datasets and information on a single platform. While it offers manifold benefits to the stakeholders, its implementation must take cognisance of the following aspects to ensure the long-term viability and effectiveness.

- **Data privacy and security:** The app will handle sensitive user data, requiring robust security measures to prevent breaches and protect privacy. Strong encryptions, access controls and regular security audits could be potential solutions to ensure data security.

- **Interoperability and standardisation:** Ensuring seamless data exchange and functionality across different charging infrastructure networks and EV models is essential. This can be facilitated through industry collaborations and use of standard/ recognised communication protocols for charging stations.

- **Scalability and reliability:** The app must be designed to handle increasing user loads and data volumes while maintaining reliability and performance. Cloud-based infrastructure and scalable architecture could be opted to ensure long-term reliability.

- **User adoption and engagement:** Achieving widespread user adoption and sustained engagement requires a user-friendly interface, compelling features and effective marketing. The information collected via feedback surveys in the app can be regularly analysed to identify and address user concerns. Introducing regular application updates will also ensure enhanced user experience.

- **Funding and sustainability:** Securing long-term funding and developing a sustainable business model is crucial for ongoing maintenance and development. The app could be funded through innovative models such as PPP partnerships (with private CPOs, DISCOMs), introduction of subscription models for prime features and in-app advertisements.

- **Integration with existing systems:** Successfully integrating with existing SMC, DISCOM and CPO systems will require careful planning and execution. Therefore, the implementation will be carried out in participatory approach wherein all the stakeholders involved from the inception stage to ensure ease of data-sharing.

- **Evolving technology:** The EV landscape is constantly evolving, so the app must be adaptable to new technologies and trends. The application will undergo continuous monitoring, evaluation and improvement based on user feedback to align with user expectations.

- **Digital literacy:** Ensuring that all users, regardless of digital literacy, can effectively use the app. Targeted campaigns using the app to sensitise the citizens about the benefits of EVs and the app’s features shall be conducted. Further, the application will be developed as an inclusive platform catering to needs of different user groups through voice prompt recognition, bilingual support etc.

- **Optimisation:** As the app unites multiple features and datasets, it is crucial to optimise the backend systems to ensure a glitch-free and smooth user experience.

The Ministry of Heavy Industries (MHI), Government of India and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH are jointly implementing the Indo-German Development Cooperation project “Promotion of transformation to sustainable and climate-friendly E-mobility”, commissioned by the German Federal Ministry for Economic Cooperation and Development (BMZ). As part of the Green Urban Mobility Partnership (GUMP) between India and Germany, the project aims to improve the conditions for coupling the transport and energy sectors for climate-friendly electric mobility and achieve sustainable, socially balanced, and inclusive urbanisation (SDG 11). The project works with Surat (Gujarat) to promote systematic, safe, and sustainable adoption of electric mobility solutions to reduce the emission intensity of the transport sector.