SCALE Blueprint for integrated G2X-V2X cross-sector planning

Project deliverable D5.6

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Authors	Shreesha Vaidhya (Rupprecht Consult)
Internal reviewers	Henning Holdinghausen (Rupprecht Consult) Pedro Gomes (POLIS Network) Bart van der Ree (Utrecht/We Drive Solar)
Document approval	Henning Holdinghausen (Rupprecht Consult) Baerte de Brey (ElaadNl)

1.1 Legal Disclaimer

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2 Project Executive Summary

SCALE (Smart Charging Alignment for Europe) is a three-year Horizon Europe project that aims at preparing EU cities for mass deployment of electric vehicles and the accompanying smart charging infrastructure.

Social Links:

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www.linkedin.com/company/ scale-project-smart-charging-alignment-for-europe

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3 Deliverable executive summary

3.1 Key words

#MunicipalAction #VehicleToEverything #V2X #SmartCharging #PublicSpace #Equity #FromEvidenceToAction #SCALEFindings #GIS #DemandHeatmap #HostingCapacity #TransformerHeadroom #PlanningConstraints

3.2 Summary

Cities across Europe are accelerating the deployment of electric vehicle charging, including smart and bidirectional charging, at the same time as they face tighter grid constraints, competing demands for public space, and rising expectations around fairness and transparency. **Experience from SCALE shows that technical solutions alone are not enough.** What determines whether charging infrastructure can be delivered at pace and scale is how well mobility, energy and land-use decisions are aligned in practice, and whether cities have a simple way to coordinate those decisions over time.

The SCALE Blueprint provides a practical, repeatable method for integrated planning of charging infrastructure that public authorities can apply regardless of ownership model, city size or level of technical maturity. **It is built around four recurring steps – 1) Plan and shortlist, 2) Rank, 3) Feasibility and tender specification, and 4) Operate and report** – which reflect how cities already work in delivery cycles. These steps are explained in Chapter 6 and applied consistently throughout the document.

To ensure that integration happens where it matters most, the Blueprint structures these four steps across five vertical tracks: integrated decisions and coordination, shared data and tools, delivery and procurement, monitoring and reporting, and replication and transfer. Together, these tracks identify where collaboration is needed, who is involved at each phase, and how decisions in one area affect outcomes in another. This matrix-based approach forms the core method of the Blueprint and is introduced in Chapters 5 and 6.

Rather than proposing new governance structures, the Blueprint works with the three realms that municipalities already manage – **mobility, energy and land-use** and shows how they can be brought together around concrete site decisions. City-wide goals set in Sustainable Urban Mobility Plans, land-use strategies or public-space policies are treated as inputs to early decisions, not late-stage constraints. This approach is detailed in Chapter 6 and illustrated through use-case boxes embedded in the method, drawing on SCALE cities such as Utrecht, Oslo, Rotterdam, Budapest, Paris, Gothenburg and the Munich region.

The Blueprint emphasises prioritisation and sequencing, not just site identification. Ranking is used to agree where to act first, combining usage data, grid constraints, public-space considerations and fairness objectives. Where cities engage residents or other stakeholders on proposed locations, the outcomes can be reflected directly in ranking and scheduling decisions. This ensures that local input shapes delivery without stalling programmes. The ranking approach and its use in practice are described in Chapter 6.

Delivery and procurement are addressed by translating planning decisions into clear tender specifications, drawing on SCALE's joint procurement work. The Blueprint shows how interoperability requirements, data provisions, service levels and acceptance testing can be embedded consistently across different contractual arrangements. This is covered in Chapter 6, building on the relevant SCALE deliverables.

Monitoring is treated as part of delivery. The Blueprint recommends a small number of indicators, chosen per decision cycle, that make progress visible to users and decision-makers alike. These include user-oriented indicators, system or delivery indicators, and one locally chosen fairness or process indicator, with data quality tracked as a control. Practical guidance and examples are provided in Chapter 6, with references consolidated later in the document.

Finally, the Blueprint is designed to be transferable. Cities can adopt it incrementally, reuse individual elements, or apply it across districts, neighboring municipalities or regional frameworks.

Chapter 6 sets out replication pathways and preconditions, while the reference chapter summarizes the SCALE evidence base and complementary municipal practice that informed the method. By turning lessons from SCALE into a clear, usable planning method, the Blueprint supports public authorities in moving from fragmented delivery to coordinated action making smart and bidirectional charging not an exception, but part of everyday urban infrastructure planning.

List of figures

4 List of abbreviations and acronyms

Acronym	Meaning
ASAP	As Soon As Possible
B2B	Business-to-business
B2C	Business-to-Consumer
EC	European Commission
GA	Grant Agreement
KoM	Kick-off Meeting
KPI	Key Performance Indicator
WP	Work Package
G2X	Grid-to-anything (any load)
V2X	Vehicle-to-anything (any load)
V2G	Vehicle-to-Grid
DSO	Distribution System Operator
CPO	Charge Point Operator

5 Purpose of the deliverable = reference to select the content

5.1 Attainment of the objectives and explanation of deviations

This deliverable provides the SCALE Blueprint for integrated G2X–V2X cross-sector planning. It translates SCALE project's results into a practical, city-facing method that public authorities can adopt and reuse. The Blueprint operationalizes integrated planning for public charging, smart charging and bidirectional charging by providing: (i) a clear step-by-step method (four steps supported by five tracks), (ii) explicit coordination points across the three municipal planning realms (mobility, energy and land-use), (iii) a set of transferable municipal role examples drawn from the SCALE use-case contexts, and (iv) a short indicator set for monitoring and reporting that is easy to compute and explain publicly.

The Blueprint is simplified to reduce jargon and increase immediate usability for practitioners, and municipal roles were made more explicit through structured “role boxes” integrated into the method chapter. This change was made to address feedback and to improve the document’s readability and applicability for public authorities. Where SCALE use cases did not include municipalities as consortium partners, the Blueprint does not claim direct municipal implementation within the project; instead, it infers transferable municipal roles, decisions and coordination patterns from SCALE demonstrations and documented municipal practice referenced in the deliverable.

5.2 Intended audience

This Blueprint is written for practitioners inside and around local governments such as municipalities, cities and regions:

- **Mobility and transport teams** (parking, kerbside policy, access objectives, network planning)
- **Land-use and public-space teams** (permits, accessibility, street works coordination, heritage)
- **Energy liaison staff and the distribution system operator** (DSO) interface (hosting capacity/headroom, connection windows, curtailment rules)
- **Procurement/legal teams** (tender specifications, performance requirements, enforcement mechanisms)
- **Monitoring and reporting teams** (KPIs, public dashboard, data governance)
- **External partners**: the DSO, charge point operators (CPOs), fleets, site owners, and integrators

5.3 Structure of the deliverable and links with other work packages/deliverables

The Blueprint is primarily grounded in SCALE’s technical and operational results that inform integrated planning and feasibility approaches, including methods for combining mobility demand considerations with grid capacity signals and constraints (notably D2.6). Lessons from implementation and evaluation activities are reflected in the collaboration patterns, governance needs and practical risks captured through the use-case contexts (e.g., D3.2 Use case evaluation and D3.4 Lessons learnt). Business and economic considerations (e.g., delivery models, phasing logic, and the practical implications of connection lead times and cost-to-connect) draw on the project’s business case analysis and market-facing outputs (e.g., D3.3 and relevant policy/market context deliverables). Procurement-related guidance is aligned with SCALE outputs on procurement and interoperability, ensuring that tender specifications cover the minimum requirements for interoperability, data availability and enforceable service levels, and that these requirements are expressed in language usable by public authorities (e.g., results captured in deliverables on interoperability and procurement guidance such as D5.5 and the joint procurement guideline deliverable). Monitoring and reporting recommendations, including the indicator sets and data-quality control approach, are aligned with the project’s emphasis on scalability, transparency and accountability across deployments.

Overall, D5.6 serves as an integrating deliverable: it consolidates relevant technical methods, governance lessons, procurement and interoperability requirements, and monitoring practices from across SCALE into a single, reusable reference for cities and regions.

5.4 How to use this Blueprint?

This guide is for public authorities that want to plan, enable and oversee smart and bidirectional charging (vehicle-to-everything, V2X) in partnership with distribution system operators (DSOs) and charge point operators (CPOs). Smart and bidirectional charging offer great opportunities but are by nature very multi-sector and multidiscpliplinary (mobility, energy, sustainability, land-use planning and urban health among others). To gain the benefits, cross-sector action is advised, thereby avoiding new silos being formed specifically by helping mobility, planning/land-use and energy teams make decisions together and work to the same schedule. This Blueprint applies whether charging infrastructure is city-owned, concession- or framework-based, utility-led, or provided on private land. The municipality plans, enables and oversees siting, permissions, interoperability and data, and public reporting; operators finance/build/operate under contract; the DSO provides capacity information and connection timing.

What is in scope

Public and semi-public charging (on-street alternating current, hubs including high-power direct current, workplaces, depots), including V1G smart charging and V2X where feasible. Private home charging is referenced only when it affects street space or grid planning.

How it relates to existing EU practice

The approach adapts established European guidance on aligning mobility and energy planning (e.g., SIMPLA) to the specifics of EV charging and V2X. In practice that means one shared evidence base, one shortlist, and one delivery log—so when a connection window or planning rule changes, the whole plan re-baselines once.

6 Integrated planning, operations and oversight (Mobility–Energy–Land-use)

This chapter explains (1) where departments need to coordinate, (2) what decisions are taken together at each step, and (3) how progress is checked and adjusted over time. It implements the four steps end-to-end: **Plan & shortlist → Rank → Feasibility & tender specifications → Operate & report**. It is built for municipal conditions, where mobility planning, grid constraints and public-space rules usually sit in different teams and are often handled sequentially. The aim of the blueprint is to make them work together at the right moments.

The Blueprint without assuming “one-size-fits-all” tools, works as long as the three realms – mobility, energy and land-use share a one baseline: demand, grid limits and street constraints, a common decision cycle: decide, assign, update, and a way to keep assumptions aligned when conditions change. In practice, cities often make this easier with artefacts such as a shared map view, a short site note, a pipeline list of infrastructure projects.

Across the four steps, collaboration becomes effective when departments and partners use the same assumptions and constraints: Where is a need/demand? What can the electricity network host? When? What do public-space and permitting rules allow? When a core assumption changes for example, new connection windows, land-use conditions, setup costs or standards – the ranked site pipeline and timeline are re-baselined together, so all actors stay aligned.

	Planning and Evaluation		Execution and Maintenance	
Operational Track	Step 1 Plan & Shortlist	Step 2 Rank	Step 3 Feasibility & Tender	Step 3 Operate & Report
V1 Decisions	Set one shared agenda	Apply weighted scoring	Run grid feasibility study	Track KPIs and rebase
V2 Data	Build the planning map	Create per-site card	Gate with feasibility	Maintain data pipeline
V3 Delivery	Batch by feeder/substation	Sequence a dig plan	Issue contract pack	Accept and enforce SLAs
V4 Monitoring	Select baseline metrics	Align targets to ranking	Secure required telemetry	Publish public dashboard
V5 Replication	Assemble transfer pack	Set local weights/thresholds	Reuse technical schedules	Run a regional dashboard

Figure 1: Blueprint Methodology

The **four steps** describe the end-to-end flow from planning to operation. The sub-sections that follow (6.1–6.5) are organised by the **tracks** that run through every step (coordination points; shared interfaces/data; procurement; monitoring; replication). This short walkthrough explains what happens horizontally:

S1 – Plan and shortlist

The first step is to agree, in one place, what the city is trying to achieve and what the constraints are. Mobility teams bring demand and mobility patterns and clarify what “good access” means in different areas. Land-use teams bring public-space and permitting rules, including any wider objectives that affect what is allowed (for example car-free or low-traffic areas, removal of kerbside parking, restrictions on street furniture, or heritage requirements). The distribution system operator provides usable grid constraints – such as headroom signals at the low-voltage level, indicative connection options and timing windows. So, the shortlist does not ignore delivery reality. The output is a first shortlist of candidate charging sites that already reflects city policy, grid constraints and public-space feasibility, with basic assumptions recorded so they can be updated later.

S2 – Rank and agree priorities

The second step turns the shortlist into an explainable order of delivery. Charging sites are ranked using a small number of criteria that the whole team understands (for example demand, grid fit, street/permit fit, access and equity, readiness and cost-to-connect). The city chooses the weights and publishes them for transparency. In practice, cities often start this step by looking at how existing charging infrastructure is actually used. For example, in Utrecht the municipality receives usage data for all public charging points in the city, as required through its charging tenders. When utilisation in a specific district increases consistently, this signals that additional charging capacity is needed there. These demand signals are then combined with other considerations, such as the availability of suitable parking locations, opportunities to cluster chargers, and local grid conditions.

The Blueprint recommends turning this combined view into a **simple, weighted ranking**, using a small number of criteria that can be explained internally and externally. Typical criteria include demand and usage pressure, grid fit and delivery timing, space and permit feasibility, access and equity considerations, readiness to build, and indicative connection costs. Cities choose and publish their own weightings, reflecting local priorities rather than applying a one-size-fits-all formula. Importantly, agreeing priorities is also a social and political step, not only a technical one. In Utrecht, once a district is prioritised for additional chargers, residents are informed about the proposed locations and given the opportunity to raise objections. These objections are reviewed and, where justified, lead to adjustments in siting or design. This process helps to surface local knowledge early, reduce resistance during installation, and maintain trust in how decisions are made.

For this reason, the Blueprint treats resident input as part of the ranking and agreement phase, rather than as a late-stage hurdle. Whether through formal consultation, targeted notifications or structured feedback periods, cities are encouraged to integrate local acceptance into their prioritisation logic. Charging sites that are technically feasible but face strong and unresolved objections can be deprioritised or redesigned, while broadly supported charging sites can move forward with greater confidence. The outcome of Step S2 is therefore a prioritised charging site list that is technically sound, policy-aligned and socially informed. This list forms the basis for feasibility checks and tender preparation in the next step, and it can be revisited whenever new data, changing conditions or stakeholder feedback require an update.

S3 – Confirm feasibility and translate into tender specifications

The third step prevents late surprises. For the charging sites that are intended to move forward with the installation of charging stations, feasibility checks confirm the likely connection option (low-voltage or medium-voltage), routing constraints, lead-time and cost bands and any operational envelope for managed charging or bidirectional behaviour. This step produces a clear go/hold decision and a delivery window tied to realistic connection and permitting timing. Procurement then translates the requirements into tender specifications that make delivery scalable and accountable, regardless of ownership model. This includes interoperability expectations, data delivery requirements, service levels and acceptance testing (especially important for smart charging and V2X, where reliable operation must be proven in the field before scaling).

S4 – Operate, report and update the pipeline
The fourth step keeps the programme reliable and aligned over time. Operators maintain the service and provide the data needed for oversight. The municipality uses a small dashboard to track what users experience (access, reliability and pressure) and what determines delivery realism (connection lead time, on-time delivery and one locally chosen policy check such as coverage in driveway-poor areas, permit time or accessibility compliance). The programme remains credible when the city publishes updates on a predictable rhythm and when the pipeline is updated in one go whenever a core assumption changes (for example a connection window shifts, a permit condition changes, or a standard/technology requirement is updated).

6.1 V1: Integrated decisions and hand-offs

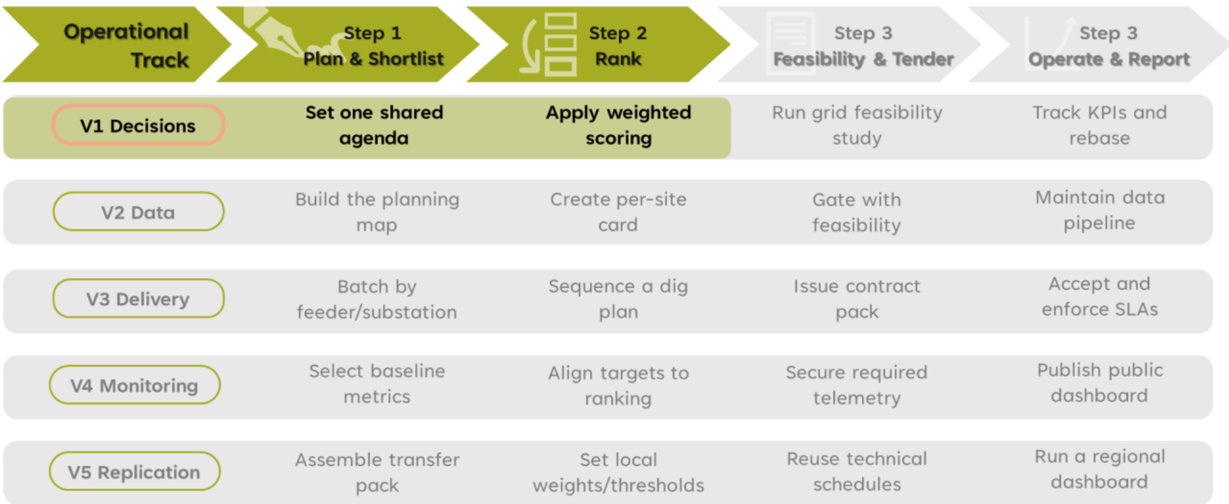

Figure 2: Step and Track Applicable in Section 6.1

For each site, decisions need to be made together across three realms mobility, energy and land-use and checked against the city's wider goals and rules (often set in a Sustainable Urban Mobility Plan, land-use strategies, or public-space programmes). These wider goals can be enabling (e.g., charging at mobility hubs, electrifying shared fleets) or constraining (e.g., reducing kerbside parking, car-free centres, pedestrianisation, heritage rules). The Blueprint treats these goals as inputs to the site decision, not as "late-stage blockers". For each candidate site, three decisions are taken in parallel:

Place & service (Mobility + city policy intent)

Decide what charging service fits the place and the policy direction for that area. This includes:

- Service need and user group: neighbourhood access, shared mobility, taxis/private hire, logistics, municipal fleet, visitors.
- Typology choice: on-street alternating current charging, hub/charging plaza, workplace, depot, high-power corridors (where relevant).

- Public-space policy filters: for example, whether the city is reducing kerbside parking, limiting car access in the centre, prioritising walking/cycling space, or shifting parking to hubs/edges. These policies may imply “no kerbside charging here” or “only in managed bays / hubs” even where demand is high.
- Operating rules: pricing/idle rules, accessibility standards, rotation/turnover, shared-bay rules for car-sharing where relevant.

Network & operation (Energy + delivery realism)

Decide whether the site can be served by the electricity network, when, and under what operational constraints:

- Indicative connection option (low-voltage/medium-voltage), lead-time band, and cost band.
- Hosting capacity signal / headroom (and the window in which capacity is expected to be available).
- Where applied, smart charging constraints or capacity signals (e.g., available capacity envelopes) and curtailment/export rules.
- Where relevant, whether bidirectional operation is feasible and under what limitations.

This prevents “good mobility locations” from becoming late-stage failures due to grid constraints discovered too late.

Space & permission (Land-use + public realm rules)

- Confirm whether the site is physically and legally deliverable in the public realm, and consistent with land-use/public-space strategy:
- Footway widths, cabinet/pedestal placement rules, safety/visibility, accessibility, utilities conflicts, fire/emergency access.
- Heritage and streetscape requirements where applicable (often decisive in historic centres).
- Permit pathway and expected time, including whether standard details can be used or a bespoke design is required.
- Alignment with public-space reallocation programmes (e.g., removing parking, widening pavements, creating cycle infrastructure), which can either create opportunities (space freed) or restrictions (no new street furniture).

The output is a realistic “permit and buildability route” that reduces redesign and delay.

Decisions on coordination

The municipality convenes one joined-up decision so the mobility, land-use planning and the distribution system operator (DSO) work from the same constraints and goals. In practice, this coordination is typically organized around batches of sites (for example per district or delivery tranche), rather than as a separate meeting for each individual charger. The operator/charge point operator (CPO) (or a technical consultant, where needed) runs the feasibility check covering loading/voltage, connection option and indicative lead time/cost and, where applicable, bidirectional behaviour.

If a core assumption changes (e.g., connection window shifts, heritage condition is added, street design changes, cost step-change), the municipality triggers an update so the priority order and delivery timing are adjusted together. This avoids parallel lists drifting across departments.

Roles & responsibilities

- **Municipality** (accountable): convene the decision; keep the site pipeline; apply policy filters (e.g., centre restrictions, kerbside rules); set access/idle rules; apply placement standards and permit steps; trigger updates when assumptions change.
- **DSO** (responsible/consulted): provide headroom/capacity signals, indicative lead times, curtailment/export policy and feasible connection windows; validate feasibility assumptions.
- **Operator/CPO** (responsible): propose siting and operational approach; run/commission feasibility; provide buildability and operations and maintenance view; deliver operational and telemetry data.
- **Consultant** (optional): independent feasibility or audit where not done by DSO/operator.
- Outputs: go/hold decision, assigned next actions, target go-live window, and indicators to track (user indicators + grid/delivery indicators + fairness/delivery indicators).

Utrecht use-case snapshot:

Dense neighbourhoods; city-scale bidirectional car-sharing programme alongside public on-street charging.

POLICY CONTEXT

Utrecht's mobility policy includes reducing on-street car parking over time to free public space for sustainable modes, which changes where and how charging can be placed (more emphasis on hubs and carefully managed kerbside locations).

MUNICIPALITY'S ROLE

- Set kerb and parking rules that enable shared V2X bays in residential streets.
- Match charger typologies to place
- Apply accessibility and idle-time policies for fair use such as focusing on districts where existing chargers are heavily used
- Enable residents to object to a proposed location
- Maintain a shared site pipeline and release ready-to-build locations.

HOW COLLABORATION WORKED

- The DSO provided local capacity windows and indicative connection options.
- Operators (charge point operator/fleet/aggregator) supplied chargers, vehicles, aggregation and feasibility results.
- Fixed-cadence meetings aligned charging sites, permits, connections and street works.

WHAT CAN BE REPLICATED

Adopt kerb/parking rules that explicitly allow shared bays where dwell time is high and headroom exists, and keep one shared pipeline rather than parallel departmental lists.

Figure 3:Municipality role in the use case Utrecht (integrated decisions with smart/V2X context)

At this early stage, several practical risks already become visible, particularly where charging infrastructure interacts with public-space objectives and broader city policies. A recurring risk at this stage is a conflict over the use of public space. Kerbside charging locations can clash with wider mobility and land-use objectives, such as reducing on-street parking, prioritising walking and cycling, or limiting street furniture in sensitive areas. These conflicts often surface late if siting decisions are made in isolation. The Blueprint mitigates this risk by requiring that place and service decisions, space and permission considerations, and wider city objectives are addressed together from the outset. Where uncertainty remains, cities can apply standard cross-sections and time-bounded trials with clear before-and-after metrics, rather than treating every location as a bespoke design debate. This approach allows contested locations to be tested, adjusted or replaced early, while keeping the overall delivery pipeline moving.

6.2 V2: Shared interfaces, data and tools

This Blueprint defines the minimum shared interface needed for integrated delivery, and then shows optional ways cities can implement that interface using their existing tools.

6.2.1 Minimum viable shared interface (must-have)

Integrated planning becomes practical when the three realms share four things:

(1) Shared constraint dataset (Energy)

Planning needs distribution constraints as first-order inputs, such as transformer/feeder headroom, transformer location/capacity signals, indicative connection options and lead-time bands. In Utrecht's tool context, transformer capacity and location data (from the grid operator) is used to test whether candidate charging locations are feasible and to understand where grid headroom exists.

(2) Shared demand and usage evidence (Mobility)

Planning needs a realistic representation of charging behaviour, not just counts of vehicles. Demand and dwell assumptions can be grounded in proxies (population, activity, parking) and, where available, in charging-session data. Utrecht's modelling approach uses real charging session datasets to simulate charging profiles and network impact under different strategies.

(3) Shared scenario assumptions (All realms)

Policy and delivery choices are compared through a common set of scenarios: adoption rates, charging strategies (unmanaged vs managed), and wider electrification drivers that influence the low-voltage network. A shared scenario set prevents parallel modelling exercises and enables one discussion about trade-offs.

(4) Shared operational coupling where implementier (Mobility ↔ Energy)

Where available, a capacity-signal approach such as Grid Aware Charging provides a practical interface between DSOs and charging operators: the DSO forecasts available capacity at the low-voltage level and operators keep charging within that envelope (with penalties where applicable). This is a concrete mechanism through which mobility charging operations align with energy constraints.

These shared interfaces can be implemented in different ways: a municipal geographic information system view, a spreadsheet, a project tracker, or a dedicated tool. The Blueprint only requires that the three realms work from the same constraints, assumptions and cadence.

Cities may choose to package the minimum shared interface into simpler artefacts to speed coordination. These are not mandatory but are often useful:

Shared planning map (layers)

- Demand heatmap (residential, fleets, taxi/private hire vehicle, workplace).
- Hosting capacity signals (transformer/feeder headroom; indicative DSO windows).
- Planning and streetscape constraints (heritage, footway width, utilities).
- Equity overlay (on-street-only households, accessibility needs).

Figure 4: Overlapping layers of mobility, energy and land-use

Short site note (one-page site record or equivalent)

A brief record for each candidate location so the same information is available to transport, planning, the DSO and the operator/CPO:

- Context photo/link, typology, anticipated demand/dwell.
- Indicative connection option (low voltage/medium voltage), distance to connection point, curtailment/export notes.
- Constraints (safety, heritage), cabinet location, civil works complexity.
- Equity/access notes, basic cost cues, named contacts.

Ranking sheet and delivery pipeline (any format)

A ranking sheet can translate six scores into one order and a suggested delivery window and a pipeline list can track stage, owner, next action, DSO/permit status, target go-live, risks and triggers for re-baselining.

A simple ranking sheet turns six scores into a total and a suggested delivery order **Demand, Grid fit, Street/permit fit, Access and equity, Readiness and Cost-to-connect**

Weightings are local and the key practice is to publish the chosen weights for transparency and keep tie-break rules fixed (recommended: grid fit → cost-to-connect → readiness). Apply “hard stops” where a site cannot pass minimum space/permitting rules.

A delivery pipeline prevents drift when multiple departments and partners are involved:

- Columns can include: site ID, stage, owner, next action, DSO status, permit status, civil works, installation, target go-live, risks.
- Every actor updates their columns; the city curates.
- The pipeline triggers re-baselining when an upstream assumption shifts.

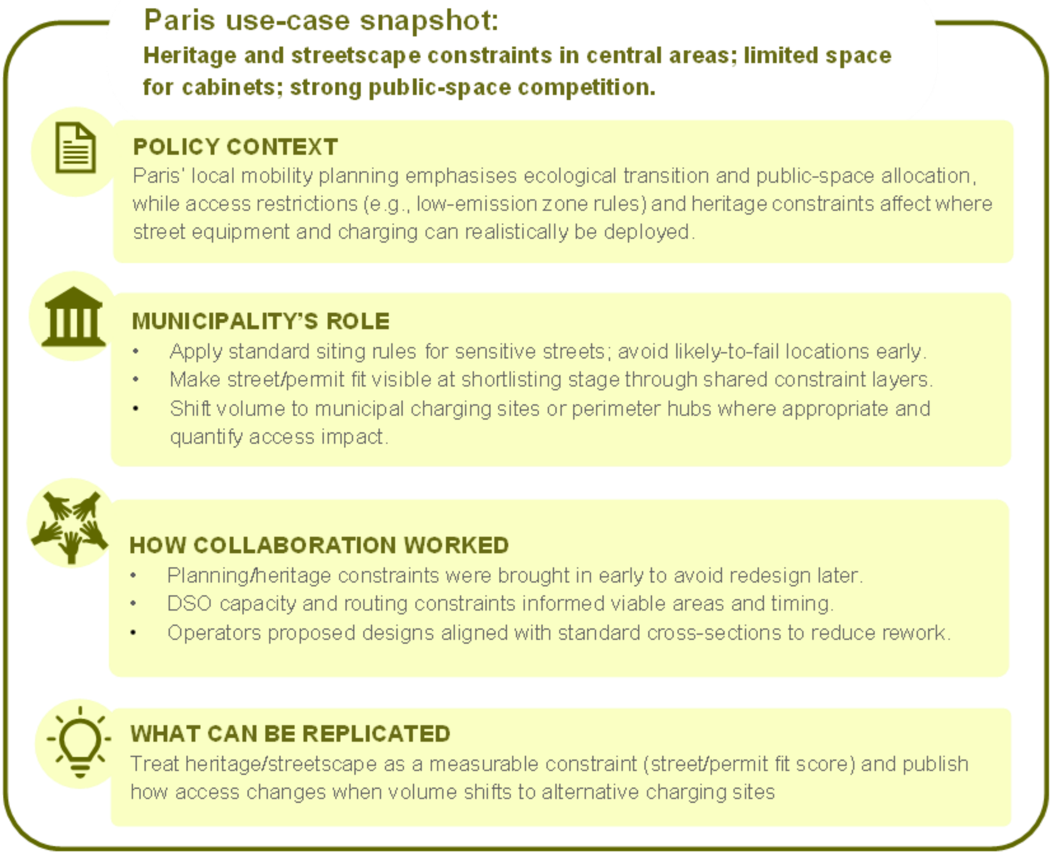

Figure 5: Paris use-case interpretation

Some of the most persistent delivery challenges originate in how priorities and inputs are defined, especially where equity considerations or data quality are not made explicit. Equity risks often emerge when delivery naturally gravitates towards locations that are easiest to permit or cheapest to connect, leaving areas with limited private parking behind. The Blueprint addresses this by making coverage in on-street-only areas explicit in both the ranking criteria and the shared delivery list, so trade-offs are visible rather than implicit.

Data quality is another frequent underlying risk at this stage. Incomplete or inconsistent inputs weaken prioritisation and undermine trust between departments. For this reason, the Blueprint treats missing or unreliable data as a planning issue rather than a technical detail, and encourages cities to define minimum data requirements early, including responsibility for maintaining and updating shared inputs.

6.3 V3: Feasibility and tender specifications (building on D5.4 SCALE joint procurement guidance)

Operational Track	Step 1 Plan & Shortlist	Step 2 Rank	Step 3 Feasibility & Tender	Step 3 Operate & Report
V1 Decisions	Set one shared agenda	Apply weighted scoring	Run grid feasibility study	Track KPIs and rebase
V2 Data	Build the planning map	Create per-site card	Gate with feasibility	Maintain data pipeline
V3 Delivery	Batch by feeder/substation	Sequence a dig plan	Issue contract pack	Accept and enforce SLAs

This step encompasses embedding technical/interoperability requirements, data, service levels and acceptance tests independent of ownership models so that delivery scales and remains accountable.

Once a ranked pipeline exists, the next task is to turn “good places” into “good and feasible places”. This is the role of the feasibility check. It confirms, at a level that is practical for delivery, whether a site can be energised in the intended timeframe and under what constraints. The feasibility check typically clarifies the likely connection option (low-voltage or medium-voltage), any routing constraints, and the approximate lead time and cost band. Where smart charging is expected, it also clarifies the operating envelope—whether charging must follow time-based capacity limits, whether curtailment rules apply, and which assumptions are safe to use for planning. Where bidirectional charging is relevant, feasibility includes whether export behaviour is possible in practice and what limitations apply.

Feasibility checks are usually carried out by the charge point operator (CPO) and/or the distribution system operator (DSO), with technical consultants used where a neutral assessment is needed or where the market structure does not allow the operator to provide it. The key output is not a perfect engineering design; it is a clear “go/hold” decision that protects the pipeline from late-stage surprises. A “hold” decision is a normal outcome when a site is good from a mobility perspective but is blocked by connection timing, street works dependencies, heritage constraints, or cost steps that cannot be justified in the current delivery cycle. What matters is that the reason for a hold is explicit, recorded, and revisited when conditions change. Tender specifications then translate the feasibility conclusions and the Blueprint’s requirements into enforceable conditions that make delivery scalable and accountable, regardless of ownership model. This is where many charging programmes succeed or fail. If procurement does not specify interoperability, data delivery, service levels and acceptance testing in plain enforceable terms, cities can end up with installations that work only in limited conditions, do not share data reliably, or cannot be managed as a coherent network.

In practice, tender specifications should lock three things. First, interoperability and openness: chargers must support standard operational protocols (such as Open Charge Point Protocol for charger management and Open Charge Point Interface for information exchange), and where bidirectional readiness is part of the programme direction, an upgrade path should be specified in a technology-neutral way, reflecting relevant communication standards (for example International Organization for Standardization 15118-20 readiness where appropriate). Second, data delivery: the required data fields and reporting cadence should be described clearly enough that operators know what must be delivered and cities can run oversight without bespoke integrations. Third, service outcomes: availability and uptime targets, incident response expectations, and remedies if service levels are not met should be structured so performance can be enforced over time, not just at commissioning. Go-live acceptance should be treated as a bridge between installation and scale. Rather than relying on paper compliance, acceptance tests should confirm that real vehicle–charger combinations work as intended, and that the site operates within any agreed smart charging or bidirectional constraints. This is particularly important for smart charging and V2X, where the gap between “theoretically possible” and “reliably delivered in the field” can otherwise remain hidden until after scale-up.

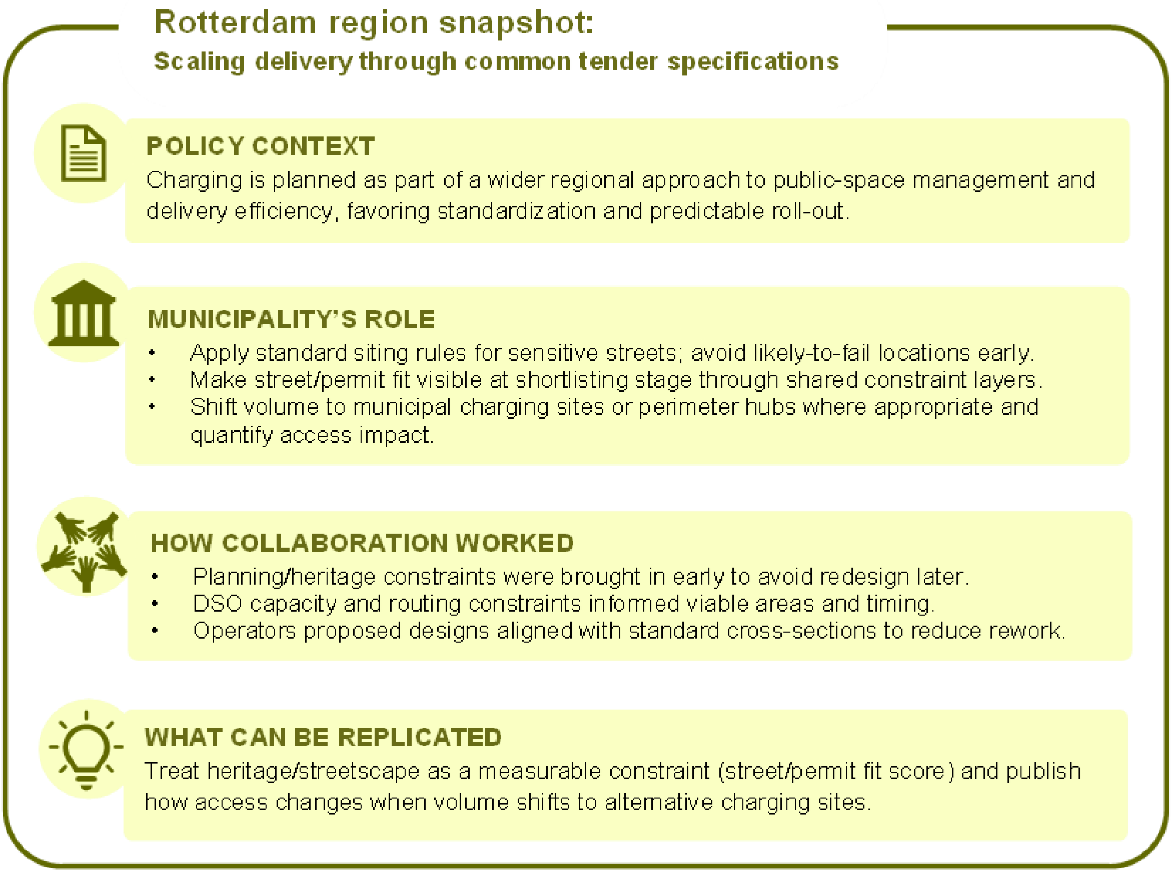

Figure 6: Interpreted inference from use-case execution in Rotterdam

Once sites move from planning to delivery, different risks come to the fore, particularly those linked to grid connections and technical interoperability. Grid-related delays are among the most common causes of programme slippage. They typically appear as long low-voltage or medium-voltage connection lead times, or as repeated changes to previously indicated connection

windows. A practical mitigation is to distinguish between sites that depend on future reinforcement and those that can be delivered quickly, and to deploy “no-regrets” installations in municipal lots or other easier-to-connect locations while phasing higher-power or bidirectional charging sites alongside medium-voltage works.
Interoperability risks can also undermine scale when vendor-specific solutions or exceptions appear during delivery. The Blueprint mitigates this by embedding protocol support requirements, acceptance tests using real vehicle–charger combinations, and firmware and upgrade obligations into tender specifications. This ensures that systems remain compatible as standards evolve and prevents lock-in at the delivery stage.

6.4 V4: Monitoring and public reporting

Operational Track	Step 1 Plan & Shortlist	Step 2 Rank	Step 3 Feasibility & Tender	Step 3 Operate & Report
V1 Decisions	Set one shared agenda	Apply weighted scoring	Run grid feasibility study	Track KPIs and rebase
V2 Data	Build the planning map	Create per-site card	Gate with feasibility	Maintain data pipeline
V3 Delivery	Batch by feeder/substation	Sequence a dig plan	Issue contract pack	Accept and enforce SLAs
V4 Monitoring	Select baseline metrics	Align targets to ranking	Secure required telemetry	Publish public dashboard

Monitoring is treated as part of delivery, not as a separate reporting exercise. What is needed is a small set of indicators that can be reviewed on a regular rhythm and, where useful, published in a simple format (for example a one-page summary or a basic online page). The focus is on what users experience whether charging is available, whether queues are forming, and whether chargers are working while also tracking delivery realities that determine whether programmes scale, such as connection lead times, permit timelines and adherence to the delivery plan. Where smart charging is used, cities can also report one or two grid-alignment signals in plain terms (for example share of sessions shifted to off-peak, or managed charging share), rather than relying on complex peak-reduction calculations.

In many cases, the municipality can start with a simple spreadsheet or quarterly summary using data already available from charge point operators (as part of tender reporting) and from the distribution system operator (connection lead times and grid constraints where shared). Where multiple charge point operators operate in the same city, the practical aim is not to merge proprietary dashboards, but to request a small common reporting extract (agreed fields and cadence) that allows the municipality to track the agreed indicators consistently across operators. Smaller municipalities can apply the same approach in a lighter form, focusing on a minimal set of user-facing service indicators and one delivery indicator, and scaling up only if the programme grows.

Progress and success are tracked through a small set of indicators that are easy to explain publicly and practical to compute. The Blueprint recommends choosing two indicator sets per decision cycle. The first set is user-oriented, focusing on what people experience: access to chargers, queue or wait time (where relevant), and uptime/availability. The second set is system- or delivery-oriented, focusing on what enables scale: connection lead time, on-time delivery against the shared delivery list, and (where data is available) renewable share or simple smart-charging signals such as the share of sessions shifted to off-peak periods. In addition, cities select one locally relevant fairness or public-realm process indicator. For example permit time, coverage in areas without off-street parking, or the share of new locations supported by pre-wiring or “electric-vehicle-ready” provisions so distributional effects remain visible. Across all indicators, data completeness and timeliness are treated as a control metric, since missing telemetry undermines oversight.

A critical feature is that data quality is treated as a control metric. If telemetry is incomplete, late or inconsistent, the city cannot oversee service outcomes or make reliable planning decisions. For this reason, tender specifications should describe the required data fields and cadence clearly and tie data delivery to service levels. A short grace period can be used for start-up, but persistent data gaps should trigger remedies in the same way as persistent uptime failures. Reporting works best when it follows a predictable rhythm. A quarterly refresh is often sufficient for public reporting, provided the delivery pipeline is updated internally as changes occur. When connection timing, standards, costs or constraints shift materially, the ranked list and public pipeline should be re-baselined so the city can explain why the plan changed and what will happen next.

For each decision cycle (for example quarterly), choose **two small sets**:

Set A – User-centric (public service):
These show whether charging works day-to-day for residents and visitors with defined KPIs such as

- **Access to charging** (coverage): share of residents within a defined walk time or distance to a public charger, with a split for driveway-poor neighbourhoods.
  Measured via: GIS nearest-charger analysis using charger locations and population/household layers.
  Example: London’s public EV dashboard uses walk-time mapping to show proximity to charge points and gaps.

- **Reliability (uptime/availability)**: % of time connectors are operational and communicating; optionally include mean time to repair.
  Measured via: operator status/telemetry (status logs) aggregated monthly/quarterly.
  Example: Utrecht uses an uptime service level target in its public charging approach.

- **Pressure (utilisation/occupancy)**: a simple pressure signal to highlight where more capacity is needed (e.g., occupancy % or sessions per connector).

Measured via: charging session records aggregated by site/area.
Example: London's dashboard brings utilisation into planning and borough decision-making.

Set B – Grid and delivery (system reality)
These show whether the programme can scale under grid and public-space constraints. KPIs inlcude

- **Connection lead time**: time from connection request (or "ready-to-connect") to energisation, reported as median and worst-case band.
  Measured via: DSO/operator project milestones in the delivery pipeline.

- **Peak reduction (where smart charging applies)**: reduction in peak charging power compared to an unmanaged baseline (kW or %).
  Measured via: charging power profiles vs baseline assumptions; can be done at site, cluster or feeder level.
  Example: Utrecht describes a congestion "traffic-light" approach with defined reductions under grid-aware charging conditions.

- **On-time delivery**: % of charging sites delivered versus the published pipeline plan (and variance).
  Measured via: delivery pipeline dates (permit, civils, energisation, go-live).

In addition to the two headline sets, track one locally chosen priority indicator that reflects the city's policy direction and governance focus. This is not a third "set" and it is not meant to expand the dashboard; it is a single extra check that keeps the programme aligned with local rules and trade-offs. Cities can choose one such as coverage in driveway-poor areas, or permit time, or accessibility compliance. Finally, show two small data-quality checks next to the dashboard figures (not as extra outcome targets, but as a confidence label) for completeness (are required fields delivered), and timeliness (how quickly updates arrive). This prevents false certainty: if uptime or utilisation is reported from incomplete data, the dashboard should make that visible.

During operation, risks tend to surface less through isolated incidents and more through gaps in performance data and follow-up. Weak monitoring often stems not from a lack of indicators, but from unreliable or delayed telemetry. The Blueprint treats persistent data gaps as an operational failure rather than a reporting inconvenience. Mitigation measures include clearly specifying required data fields and reporting cadence, allowing a short grace period after go-live, and enforcing service levels where gaps persist. Together with the delivery pipeline and contract management records, the public dashboard provides a practical mechanism to detect risks early, track whether mitigations are working, and trigger re-baselining where assumptions no longer hold.

6.5 V5: Replication and transfer

Operational Track	Step 1 Plan & Shortlist	Step 2 Rank	Step 3 Feasibility & Tender	Step 3 Operate & Report
V1 Decisions	Set one shared agenda	Apply weighted scoring	Run grid feasibility study	Track KPIs and rebase
V2 Data	Build the planning map	Create per-site card	Gate with feasibility	Maintain data pipeline
V3 Delivery	Batch by feeder/substation	Sequence a dig plan	Issue contract pack	Accept and enforce SLAs
V4 Monitoring	Select baseline metrics	Align targets to ranking	Secure required telemetry	Publish public dashboard
V5 Replication	Assemble transfer pack	Set local weights/thresholds	Reuse technical schedules	Run a regional dashboard

This section applies across all four steps and explains how the Blueprint can be reused by other departments, neighboring municipalities or regions.

Replication is most successful when it is treated as a light form of standardisation rather than a bespoke re-design exercise. The Blueprint is designed to be adopted across departments within one city, transferred to neighbouring municipalities, or used as a shared approach in metropolitan or regional frameworks. The key is that replication does not require identical delivery models; it requires that the decision logic and minimum requirements remain consistent. Elements that are reusable “as is” include the method itself, running the four steps with the five tracks and the minimum specification expectations that allow scale, such as interoperability, data delivery, service levels and acceptance checks. Cities can also replicate the way they describe and store constraints and assumptions, whether through an existing municipal geographic information system, a project tracker, a spreadsheet pipeline, or a dedicated tool. Localisation is expected and necessary: score weights, indicator targets, cabinet and clearance standards, heritage rules, DSO windows and curtailment policy will vary. The Blueprint’s role is to provide a stable structure within which these local choices remain transparent and repeatable.

A practical “transfer pack” can be very small. It may include example layers or minimum fields for constraints and demand evidence, a compact site note structure (or the minimum fields needed per site), a ranking sheet with example weights and tie-break rules, a pipeline schema describing what is tracked across stages, a short indicator dictionary, and a tender specifications checklist describing the minimum interoperability, data and service requirements. The pack should also include one paragraph on the coordination rhythm and re-baselining rule, since this is often the difference between a method that stays alive and one that becomes a one-off exercise.

Replication pathways are diverse. Some cities start by using the approach within one city across districts and corporate estates while keeping one citywide pipeline to avoid clashes in permits and street works. Others replicate across neighbouring municipalities in a corridor or metropolitan area by aligning cabinet standards, adopting common templates and rotating a coordination meeting. Regions can replicate through a shared framework or concession that standardises tender specifications and reporting while municipalities keep siting and permit control. Utility-aligned replication is also common, where delivery sequencing is aligned to reinforcement windows and charging sites are packaged by feeder to reduce repeated disruption. Private-land replication (workplaces, depots, logistics hubs) can use the same feasibility gate and data requirements and still coordinate grid access with the public pipeline. In some cases, the first step is “data-first”: adopting the data dictionary and dashboard to prove telemetry quality before expanding to the full planning bundle. Pilot-to-scale replication is also valid: replicate one pattern first (for example neighbourhood on-street alternating current charging or a small hub), and extend to V2X once protocols, vehicles and operational readiness are proven. Finally, standards-first replication can be highly effective: introducing interoperability, data and acceptance testing requirements across existing contracts before changing delivery models.

Replication becomes easier when a few preconditions are in place: basic demand and constraint evidence exists, the DSO can share usable capacity and timing signals (even if coarse), someone is assigned to convene the coordination rhythm, and operators can deliver the required data fields reliably.

7 Blueprint in practice (Example scenario)

This worked example shows how a municipality can apply the Blueprint end-to-end across the **four steps** (S1–S4) while using the **five tracks** (V1–V5) as a practical checklist. It is written as a realistic municipal scenario, but values are illustrative.

7.1 Scenario summary: “Inner district with kerbside change + limited grid headroom”

Context

A dense inner district has many multi-dwelling apartment buildings and few private driveways/garages, so public charging is essential for residents. On the other hand, the city is implementing a mobility programme that reduces kerbside parking and expands cycling infrastructure on several main streets. Land-use/streets teams expect new restrictions on street furniture in certain corridors. The distribution system operator (DSO) indicates limited headroom at several low-voltage (LV) transformers and provides indicative windows for upgrades.

Policy and delivery constraints.

- **Mobility policy:** reduce kerbside parking on main corridors; maintain access for residents; prioritise safe walking and cycling.
- **Land-use/public realm:** limited cabinet placement in narrow footways; heritage-like streetscape conditions in a few blocks.
- **Energy:** limited headroom now in two transformer areas; one upgrade window in 12–18 months.

Charging infrastructure Programme objective for this cycle (6–12 months).

- Improve access for driveway-poor residents without undermining public-space goals.
- Deliver a first batch quickly (low-regret charging sites) while reserving larger hubs for later grid windows.
- Keep progress explainable and publishable.

7.2 Running through the Blueprint steps

7.2.1 S1: Plan and shortlist

V1 Integrated decisions and coordination points (what is decided together)

In the first decision meeting, the municipality convenes mobility, planning/public realm, the DSO interface, and the prospective operator/CPO (or a technical consultant). The group agrees the local “policy filters” that shape siting:

- **Where kerbside charging is not allowed** (e.g., main streets undergoing cycling works).
- **Where kerbside charging is allowed but constrained** (e.g., side streets with minimum footway width and standard cabinet locations).
- **Where hubs are preferred** (e.g., municipal lots or edge-of-centre charging sites compatible with reduced parking policy).

The group also agrees what “good access” means for this district for this cycle (example: “most residents in driveway-poor blocks should be within a short walk of a charger, without placing equipment on restricted main corridors”).

V2 Shared interfaces, data and tools (minimum shared inputs)

S1 uses a shared set of inputs (not necessarily a new tool):

- **Demand/dwell evidence (mobility):** driveway-poor housing blocks, parking pressure, likely dwell time patterns (overnight residential vs daytime turnover).
- **Grid constraints (energy):** transformer-area headroom signals, indicative LV/MV connection options, and upgrade timing windows.
- **Public-space constraints (land-use):** footway widths, standard cabinet/pedestal rules, planned street redesign corridors, any sensitive streetscape constraints.

Output of S1: a shortlist with basic assumptions

The team produces a shortlist of **10 candidate locations**:

- **6 side-street kerbside locations** (residential access, likely LV connections).

- **2 municipal-lot locations** (hub-style, potential for more chargers, may need MV later).
- **2 multimodal hubs near urban nodes** (higher turnover, potential DC later, likely MV dependent).

Each candidate site is recorded with the minimum information needed to avoid later confusion: location, intended service (neighbourhood access vs hub), obvious constraints, indicative connection option (LV/MV), and a first lead-time band (quick/medium/long).

7.2.2 S2 — Rank and agree priorities (example scoring)

V2 Shared tools (ranking method) + V1 joint decision

The municipality applies a simple six-score ranking to turn the shortlist into an explainable delivery order. Scores are 0–5 and combined with weights published for transparency. Where cities invite resident input on proposed locations (as in Utrecht), the outcome can be reflected in the ranking by adjusting the “street/permit fit” and “readiness” scores (and, where relevant, the “access & equity” score), so that accepted charging sites progress sooner and contested charging sites are redesigned or rescheduled.

Six scores (0–5):

1. Demand
2. Grid fit
3. Street/permit fit
4. Access & equity
5. Readiness
6. Cost-to-connect

Example weights for this cycle (published):

- Demand 25%
- Grid fit 25%
- Street/permit fit 15%
- Access & equity 20%
- Readiness 10%
- Cost-to-connect 5%

Tie-break rule: Grid fit → Readiness → Cost-to-connect.

Type	Site ref.	Demand	Grid fit	Street/ permit	Access & equity	Readi-ness	Cost-to-connect	Total /100	Notes
Side-street kerb	**S1-A**	5	4	4	5	4	3	**86**	Driveway-poor block, LV feasible
	S1-B	4	4	4	4	4	4	**80**	Standard layout, quick permit path
	S1-C	4	3	5	4	4	3	**77**	Strong streetscape fit, moderate headroom
	S1-D	3	4	4	3	5	4	**75**	Very ready, moderate equity impact
Municipal lot hub	**S1-E**	4	2	5	4	3	2	**66**	Good hub site, likely MV later
Mobility-node edge	**S1-F**	5	1	4	3	2	1	**52**	High demand, MV dependency, hold

Figure 7: Illustrative example of top 6 charging sites ranked

Output of S2 (what is cross-departmentally agreed between the three realms)

The group agrees:

- **Priority 1 ("go now")**: top 4 kerbside LV-feasible charging sites (S1-A to S1-D).
- **Priority 2 ("prepare")**: municipal lot hub (S1-E) to be designed and permitted now but energised with MV window later.
- **Priority 3/Hold ("not this cycle")**: multi-modal mobility hub (S1-F) because Medium Voltage (MV) dependency and uncertain timeline make it unsuitable for near-term commitments.

This ranking meeting is where policy conflicts are made explicit and resolved: instead of trying to force charging onto restricted main corridors, the city accepts the trade-off and uses side streets and a municipal lot hub to achieve access goals while respecting public-space objectives.

7.2.3 S3 – Feasibility and tender specifications

V3 Delivery and procurement (turning ranking into buildable packages)

For “go now” charging sites, feasibility checks confirm what is needed to energise and operate reliably:

- Likely connection option (LV vs MV) and routing constraints
- Lead-time band and cost band
- Any operational envelope for managed charging (if congestion exists)
- If relevant, whether bidirectional behaviour is feasible and what limits apply

The feasibility check output is a **go/hold decision per site** that protects the delivery plan from late surprises. “Hold” is acceptable if the reason is explicit and the site stays visible for future cycles.

Tender specifications (what is locked in regardless of ownership model)

Procurement then embeds scale-critical requirements in tender specifications so delivery remains interoperable and measurable:

- **Interoperability:** operational protocol support and information exchange requirements; upgrade readiness where relevant
- **Data delivery:** required fields and reporting cadence for status and sessions, sufficient for oversight and public reporting
- **Service levels:** uptime, incident response, repair times, and data completeness expectations with remedies
- **Acceptance checks:** commissioning tests and “go-live” verification (including, where relevant, smart charging set-points and safe V2X behaviours)

Outputs of S3

- A site-by-site feasibility gate result (go/hold + why)
- An energisation plan aligned to DSO connection windows
- Tender specifications ready for issue (or contract update schedules if an operator is already appointed)

7.2.4 S4 – Operate, report, and update the pipeline

V4 Monitoring and public reporting (small set; predictable monitoring frequency)

Once charging sites go live, the city publishes a small dashboard on a predictable rhythm (example: quarterly). The dashboard uses the Blueprint’s “two-set” approach, plus one local priority check and data quality controls.

Indicator Set A (User-centric):

- Access (coverage within an agreed walk time in driveway-poor areas)
- Uptime/availability (service reliability)
- Optional pressure signal where needed (utilisation/occupancy)

Set B (Grid/delivery – energy system reality):

- Connection lead time (how quickly charging sites can be energised)
- On-time delivery (delivered vs pipeline plan)
- Peak reduction is added where managed charging is part of this cycle's scope

Local priority check (one indicator):

- Example: coverage improvement in driveway-poor blocks, or permit time, or accessibility compliance

Data quality controls (always shown alongside):

- Completeness and timeliness of operator telemetry (so results are trusted)

V1 Re-baselining rule (what happens when conditions change)

Three months into operation, the DSO updates the upgrade window for one transformer area (shifted by six months). Rather than letting plans drift, the municipality triggers a single re-baseline:

  - Two charging sites in Priority 2 shift later
  - One alternative LV-feasible site from the hold list is pulled forward
  - The public pipeline is updated and the reason is stated plainly (connection window change)

This is a core advantage of the Blueprint: changes are handled once, consistently, across departments and partners.

7.2.5 V5 – Replication and transfer

At the end of the cycle, the municipality packages what worked into a small transfer bundle that can be used in the next district:

- the locally agreed policy filters (where kerbside is allowed, where hubs are preferred)

- the scoring weights and tie-break rules (so trade-offs remain explainable)
- the feasibility gate logic (what triggers go/hold)
- the tender specification checklist (interoperability, data, service levels, acceptance checks)
- the small dashboard structure (two indicator sets + one local check + data quality controls)

The next district can use the same structure even if its constraints differ (different public-space rules, different grid headroom, different priorities). What changes are the weights and the constraints; the method remains stable.

A.7 What this example demonstrates

This worked example shows how the Blueprint turns a complex, cross-department topic into a repeatable municipal routine. The steps create a clear flow from shortlist to operation, while the tracks ensure that key elements which are the coordination points, shared inputs, procurement discipline, monitoring, and replication are not missed. Conflicting policies (reducing kerbside parking while expanding charging) are addressed early by treating city goals as siting inputs, using ranking to make trade-offs transparent, feasibility checks to avoid late failure, and public reporting to keep progress credible and explainable.

8 Conclusions

This Blueprint makes one central point: **public charging, smart charging and bidirectional charging only scale smoothly when mobility, energy and land-use decisions are taken together, early enough, and revisited in a predictable way when conditions change**. Cities already have clearly identified roles, responsibilities and processes established for areas such as transport and parking, public space and permitting, energy liaison and grid coordination but the work often happens in sequence. The result is familiar across Europe: promising locations fail late due to grid or permitting constraints; programmes drift because assumptions change without an agreed update; and performance is hard to explain publicly because data, service levels and reporting were not built in from the start.

The Blueprint provides a practical way to avoid that outcome without creating heavy new processes. It introduces a short, repeatable four-step flow – plan and shortlist, rank, confirm feasibility and translate into tender specifications, then operate and report supported by the five vertical tracks that keep programmes coherent over time: joined-up decisions, shared interfaces and data, delivery and procurement discipline, monitoring and public reporting, and replication and transfer.

The method is ownership-neutral. It can be applied whether delivery is concession-based, city-owned with contracted operations, utility-led or mixed. What changes by context is not the method, but the local policy filters, the weightings used to rank charging sites, the permitting standards and the distribution system operator's timing constraints.

A key lesson from SCALE is that **integrated delivery does not require perfect tools**. What **it requires is practical alignment**: **a shared understanding of demand and dwell patterns, usable grid constraints and timing signals, and clear public-space and permitting rules**. Where cities have access to more advanced planning tools such as transformer-capacity mapping and feasibility modelling. Those tools can accelerate decisions and reduce rework, but the Blueprint remains applicable with existing municipal systems and lightweight coordination routines.

Where conflicting policies exist, the Blueprint is designed to make the trade-offs explicit rather than leaving them to be resolved late: for example, a city's goal to reduce kerbside parking or restrict access in the centre can coexist with electrification targets if charging typologies and locations are chosen accordingly, shifting supply to hubs, municipal charging sites or edge locations while still meeting access objectives.

The Blueprint also treats monitoring and public reporting as part of delivery. Publishing a small set of indicators helps residents and businesses see progress and strengthens coordination across departments and partners by anchoring decisions in shared facts. To keep reporting simple and credible, the Blueprint recommends two headline indicator sets per decision cycle – one set reflecting the user experience (access and reliability, with a simple pressure signal where needed) and one set reflecting grid and delivery reality (connection lead times and delivery versus plan, with peak reduction where managed charging is in scope). One locally chosen policy check (such as coverage in driveway-poor areas, permit time or accessibility compliance) keeps the programme aligned with local priorities, while basic data completeness and timeliness are tracked as control metrics so the city can trust what it publishes.

9 References

The sources below informed the Blueprint's method, the description of municipal coordination points, the recommended tender specifications, and the indicator sets. SCALE deliverables are the primary source base, complemented by documented municipal practice and established guidance for public authorities. The list is organised for practical use rather than academic review.

SCALE deliverables (primary)

- SCALE D2.6 — Integrated EV Mobility and Energy Planning Tool (transformer-capacity mapping and feasibility checks)
- SCALE D3.2 — Use case evaluation report
- SCALE D3.3 — Business case analysis
- SCALE D3.4 — Lessons learnt report
- SCALE D5.3 — Policy/market context deliverable
- SCALE D5.5 — Interoperability deliverable
- SCALE White Paper

Municipal practice and governance (supporting)

- Transport for London (TfL) and Greater London Authority (GLA): EV Infrastructure Partnership (standing forum approach)
- City of Amsterdam and partners: Flexpower smart charging programme
- Municipality of Utrecht and partners: city-scale V2G car-sharing go-live and public charging coordination
- Regional procurement frameworks (Rotterdam region / multi-municipality approaches)
- National Charging Infrastructure agendas (Netherlands)
- City of Oslo: integrated charger data picture for planning and oversight
- Additional relevant city/regional practices aligned with the use-case contexts in Chapter 9

Guidance aimed at public authorities (supporting)

- SIMPLA guidelines on harmonising energy and mobility planning

- SEEV4City policy recommendations and roadmap
- IET Guide to EV Charging Infrastructure for Local Authorities (2024)
- Regulatory Assistance Project (RAP): smart charging infrastructure guide for public authorities (2024)
- National guidance on bidirectional charging enabling conditions (Germany / NOW GmbH / National Centre for Charging Infrastructure positions)