| ubitricity Chain Analysis Update

1. Background

In October 2024, ubitricity published the report *"Chain Analysis: E-Mobility Charge Point Operator"* outlining key insights into the environmental impact of our operations. Since then, we have made progress and gained deeper insights into our value chain. This updated chain analysis focuses on quantifying emissions and identifying opportunities for improvement as per our published report in October. The aim is to transparently demonstrate the advancements we have made and highlight the areas where we continue to strive for improvement as per our findings and data found between 2024-2025.

2. Introduction

As ubitricity began active installations in the Netherlands in Q3 2024, we built awareness and understanding of the most effective ecosystem for installation and maintenance. Within the first year of rollout and operations, we identified key activities that contribute to CO_2 emissions. The table below outlines these initiatives and the changes highlighting the impact on CO2 emissions.

Initiative	**BEFORE**	**AFTER**	**Impact on CO2 emissions**
	Q2-Q3 2024	**Q2-Q3 2025**	
1. Reduce from three to two TSP installation partners	**Three installation TSPs:** • Stam&Co • Van Gelder • SPIE • Roamler (covering electrical safety provision)	**Two installation TSPs:** • Stam&Co • Van Gelder	Eliminate the amount of CO2 produced by two TSPs (SPIE and Roamler) contributing to an overall reduction in CO2 emissions for the whole programme.
2. Maintain one maintenance TSP partner covering any ad-hoc installation support (not contracting additional TSPs)	**Maintenance TSP partner:** • Citytec • Roamler	**Maintenance TSP partner:** • Citytec	Any ad-hoc installation support is now provided by Citytec to minimise the number of TSPs minimising the CO2 emissions as much as possible.
3. Increase pallet volume and bundling of transport	8 CS per pallet, 96 CS pallets per truck	**Eo Q3-Q4 2024:** 10 CS per pallet, 120 CS per truck	Reduces quantity of deliveries, less deliveries reduces CO2 emission

This has generally allowed for improvement in the impact of CO2 emissions. In the next section, we will go through the changes and learnings that we see in how we quantified our emissions.

3. Progress on Quantifying Emissions

3.1 Transport from Supplier to Location (4.1. as per Chain Analysis)

This chain step refers to the transport from supplier (Alfen) to TSP warehouse in NL.

During our half yearly analysis, we identified that the initial calculation of emissions per Charging Station (CS) was incorrect. Key factors such as varying transport distances and the number of truckloads were not considered. Instead, only a total sum of emissions was used, which led to a distorted representation. As a result, the impact of adjusting the packaging unit to include more items per CS was not accurately reflected—potential emission reductions remained invisible in the previous model.

To address this, we have corrected the calculation (Figure 5 in the Chain analysis) and introduced two key metrics: emissions per CS and the overall average emissions value. This updated approach allows for a much clearer comparison of the effects of different packaging units and transport parameters.

The calculation of emissions is based on the publicly available web tool from CarbonCare. The results, expressed in kilograms, are derived using the following assumed parameters:

- Distance between location and warehouse (based on the shortest feasible route)
- Weight of delivered quantity
- 13–18 T truck as reference, including cargo handling
- TOTAL emissions (comparable to WTW: Well-to-Wheel)

For our ongoing semi-annual analysis and evaluation of progress in reducing CO_2 emissions, we continue to rely on the previously established methodology. This is due to the fact that we have not yet received verifiable data from our supplier to support a more detailed or updated assessment.

The table below depicts the original calculation from the chain analysis (Figure 5) and new calculation (Figure 5.1 – July to August 2024, and Figure 5.2 – September to December 2024).

Initial Calculation as per Chain Analysis:

TSP / Warehouse Location	Distance in km	Quantity of charging stations	Pallets delivered	Kg weight total	CO2 emissions in kg
Alfen to Stam&Co	72	136	17	7,024	46.91
Alfen to SPIE (Amsterdam)	55	48	6	2,479	11.67

Alfen to Van Gelder (Lunteren)	71	32	4	1,653	10.75
Alfen to Van Gelder (Lopik)	74	72	9	3,719	25.76
Total	**272**	**288**	**36**	**14,875**	**95.09**
Emission per charger					**3.03 kg CO_2**

Figure 5: CO2 emissions for MRA-Elektrisch project deliveries (July-August 2024), from Factory to TSP warehouse

Updated Calculation:

TSP / Warehouse Location	**Distance in km**	**Quantity of CS**	**Pallets delivered**	**Kg weight total**	**Total CO2 emissions in kg**	**CO2 emission per CS in kg**
Alfen to Stam&Co	72	136	17	7,024	46.91	0.34
Alfen to SPIE (Amsterdam)	55	48	6	2,479	11.67	0.24
Alfen to Van Gelder (Lunteren)	71	32	4	1,653	10.75	0.34
Alfen to Van Gelder (Lopik)	74	72	9	3,719	25.76	0.36
					Average Emission per CS	**0.32**

Figure 5.1: CO2 emissions for MRA-Elektrisch project deliveries (July-August 2024), from Factory to TSP warehouse

TSP / Warehouse Location	**Distance in km**	**Quantity of CS**	**Pallets delivered**	**Kg weight total**	**Total CO2 emissions in kg**	**CO2 emission per CS in kg**
Alfen to Stam&Co	72	150	15	6,525	46.16	

						0.31
Alfen to SPIE (Amsterdam)	55	50	5	2,175	10.60	0.21
Alfen to Van Gelder (Lunteren)	71	162	16	7,047	47.71	0.29
Alfen to Van Gelder (Lopik)	74	150	15	6,525	49.16	0.33
					Average Emission per CS	**0.29**

Figure 5.2: CO2 emissions for MRA-Elektrisch project deliveries (September-December 2024), from Factory to TSP warehouse

In quarters Q1 to Q3 2024, a lower number of charging stations per pallet led to a higher number of transport trips. With the adjustment introduced in September – more charging stations per pallet and thus per truck – the analysis clearly shows a positive impact on CO_2 emissions per charging station. A comparison of Tables 5.1 and 5.2 clearly illustrates this effect, showing a 12% reduction in emissions per CS.

3.2 Transport to Installation site (4.2. as per Chain Analysis)

This chain step refers to the transport to three installation sites for three TSPs we initially contracts.

Aside from minimizing the number of TSPs, the calculation on the average emissions has reduced to 154 g / km according to Vans | T&E. This is also reported by Dutch national statistics agency (CBS). According to CBS data, the decrease comes from adoption of electric and hybrid vehicles.

From the beginning of the project June 2024 to June 2025, we have installed approximately 390 AC chargers in the Netherlands, which is less than we anticipated. The inflow of installation sites from the customer, grid constraints and TSP capacity are the main reasons for this reduction.

Due to that assumption, the initial calculation anticipated for multiple CSs to be installed across different regions of Netherlands per day. This has resulted in a miscalculation of estimates per TSP of roughly 113km for Van Gelder and Stam & Co and 63 km for SPIE. The original (Figure 6) and updated (Figure 6.1) calculations are shown below.

Initial Calculation as per Chain Analysis:

Distance in km	Van: CO2 per km (g)	Estimate CO_2 Emission per charging station (kg)
250	158	**39.5 kg CO_2**

Figure 6: Estimated Emissions per charging station from transport to installation site per TSP team

Updated Calculation:

Distance in km	Van: Co2 per km (g)	Estimate CO2 emission per CS (kg)
142	154	21.868 kg CO2

Figure 6.1: Updated calculation on average CO2 emissions per CS for Van Gelder & Stam&Co

3.3 Process of Installation (4.3. as per Chain Analysis)

The chain analysis refers to the emissions estimated on-site per AC standalone.

As we began to install, the installation team has realised that the process can be improved to minimise CO2 emissions. The process has been improved by replacing the diesel-powered mini digger with an air pressure rocket for creating underground cable trenches. Unlike diesel engines, the air pressure rocket does not emit CO_2 during operation. When powered by grid electricity—especially from renewable sources—its emissions are near zero. As a result, the overall CO_2 emissions per charging station have been reduced by approximately 60 to 70%, making the installation process significantly more sustainable.

For the calculation of the air pressure rocket has been calculated as follows:

- The **carbon intensity** of electricity in the Netherlands (as of August 2025) is approximately **394 grams of CO_2 per kWh**, or **0.394 kg CO_2/kWh**. CO2 emissions per kWh in Netherlands - Nowtricity
- The **total electricity used** for the trenching operation is estimated at **15 kWh**. This is under the assumption that a typical air pressure rocket used in trench work consumes 7-10kW of electric power during operation. 7.5 kW x 2 hours = 15 kWh, taking the conservative approach of 7.5kW.

This leads us to the following calculation:

$15\text{kWh} \times 0.394\text{kg } CO_2/\text{kWh} = 5.91\text{kg } CO_2$

The original (Figure 7) and updated (Figure 7.1 based on data from January-June 2025) calculations are shown below.

Initial Calculation as per Chain Analysis:

Equipment	Fuel	Hours	Consumption (L/hour)	CO_2 emissions (kg) per charging station
Mini-digger	Diesel	2	7	46
Compressor	Gasoline	1	3.5	10
Wacker rammer	Gasoline	0.25	1.2	1

Tiresaw	Petrol	0.17	1.2	1
Mounting box	Diesel	1	2.5	8
Total		**4.42**	**15.4**	**65 kg CO_2**

Figure 7: Estimated emissions per one charging station / per location site (average)

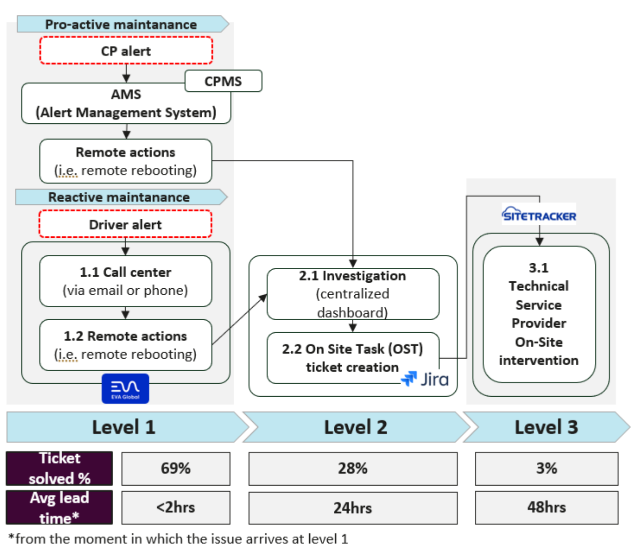
Updated Calculation:

Equipment	Fuel / Type	Hours	Consumption (L/hour)	CO_2 emissions (kg) per charging station
Air pressure rocket	Grid electricity	2.00	–	5.91
Compressor	Gasoline	1.00	3.5	10.00
Wacker rammer	Gasoline	0.25	1.2	1.00
Tiresaw	Petrol	0.17	1.2	1.00
Mounting box	Diesel	1.00	2.5	8.00
Total		**4.42**	**8.4**	**25.91**

Figure 7.1: Updated emissions per one charging station / per location site (average)

3.4 Process of reactive and preventive maintenance (4.4. as per Chain Analysis)

This chain step refers to the maintenance process (see Figure 8) including reactive, proactive, and preventive. On average, 69% tickets are solved remotely within 2 hours when the alert management system from the backend office or EV drivers notifies the customer service. This minimizes the CO_2 emissions significantly.



We have maintained the position of minimizing the emissions significantly through 69% on average for tickets to be solved remotely. This has been strictly monitored by the Head of Customer Support at ubitricity.

For MRA-Elektrisch project of the existing network size of 736 AC chargers, there are approximately 50 reactive maintenance visits per month on average. The estimated average value of CO_2 emissions per visit is shown in Figure 9. As the reactive maintenance is per case basis, the visit usually takes place from Amsterdam, which is at least 50 km one-way.

As the number of AC chargers were lower than anticipated, the average number of reactive maintenances per visits per month also decreased. The average reactive maintenance visit is currently around 35 visits per month on average.

For reactive maintenance (under the assumption that the reactive maintenance visits happen once per day). The calculation is based on the average emissions of 157.7g / km of vans registered in Europe in 2020: CO2 emission standards for new cars and vans (europa.eu).

For the new project with MRA-Elektrisch, the contracted maintenance TSP is looking after the entire process of both reactive and preventive maintenance, including the long-term year-on-year planning, which reduces CO_2 emissions, improves efficiency, and increases uptime.

Citytec has improved their data transparency for CO2 emissions by tracking the distance (km). From January to June 2025, their total reactive maintenance is 344 chargers with a total km of 7.142.44.

The table below shows the initial calculation (Figure 9) and updated calculation (Figure 9.1 based on data from January – July 2025).

Initial Calculation as per Chain Analysis:

Distance in km	Van: CO_2 per km (g)	Estimate CO_2 Emission (kg) for reactive maintenance per charging station
140	158	35 kg CO_2

Figure 9: Estimated emissions per reactive maintenance visit

Updated Calculation:

Average Distance in km	Van: CO_2 per km (g)	Estimate CO_2 Emission (kg) for reactive maintenance per charging station
20.76 km	0.15	3.20 kg / CS

Figure 9.1: Updated emissions per reactive maintenance visit

This concept assumes that the average speed of cars in Netherlands is around 23.3km/h. This is based on the number of kilometers travelled per year, divided by the number of hours a car is in use. While the maximum speed on the highways can be 130 km/h, the average speed is measured by, among other traffic lights, etc.

3.5 Overview CO2 emissions in the chain (4.5. as per Chain Analysis)

From all our aforementioned findings and learnings, the table below provides an overview of the total CO_2 emissions in with the initial and the updated calculation

Initial Calculation as per Chain Analysis:

DISTRIBUTION EMISSIONS			
CHAIN STEPS	**INITIAL**	**REVIEW**	**TREND**
Transport from supplier to location	0.32 kg*	0.29 kg	-0.03
Transport to Installation Site	39.5 kg	21.87 kg	
Process of Installation	65 kg	25.91 kg	-39.09
Process of reactive and preventive maintenance	35 kg	3.20 kg	
Total (kg CO_2)	**139.82 kg**	**51.27 kg**	**88.55 kg**

(Corrected retrospectively based on reassessment, updated data, and revised calculation approach.)*

Figure 10: CO_2 emissions per chain step for one AC Stand Alone charging station

The calculated overall difference amounts to 88.55 kg of emissions for one AC Stand Alone charging station. We are already observing improvements in several process steps. However, as the underlying data from our initial chain analysis was partially based on estimates—and some inaccuracies in the calculations became evident during the installation phase—we are not yet in a position to provide a representative assessment.

4. Update on Improvement Opportunities

ubitricity remains committed to reducing its environmental footprint through defined targets and a structured action plan. This section highlights key reduction opportunities identified via Chain Analysis, as well as improvements already achieved.

Learnings from the past six months and the correction of previously estimated data have enabled us to establish a reliable foundation for future assessments. The year **2024** serves as the reference year, representing the first complete and validated emissions footprint for consistent progress tracking.

4.1 Opportunities for CO2 reduction in the chain (5.1. as per Chain Analysis)

Figure 11 depicts the quantified reduction opportunities within the chain analysed.

DISTRIBUTION EMISSIONS	
PHASE	**EMISSIONS**
4.1. Transport from supplier to location	stabalize at 0.29 kg
4.2.Transport to Installation Site	21.3 kg
4.3.Process of Installation	stabalize at 25.91 kg

4.4. Process of reactive maintenance	3.00 kg
Total (kg CO_2)	**~50 kg**

Figure 11: Reduction potential per chain step for one AC Stand Alone charging station

Plan of Approach:

Figure 12 is the overview of the targets, the plan of approach to reach the targets and the people responsible. The updates column is added to show the progress of Plan of Approach.

Activity	Target and Planning	Person responsible	Deadline	Reduction measure	Updates
4.1. Bundling of transport	**Target**: Change the on-demand pallet delivery to bundling based on track load **Planning**: Adjustment of production + Call-off orders	Roll-out managers (AC) /Procurement Manager (LP) in collaboration with supplier	Q4/2024	With the increase of the pallet volume and bundling of transport, to save 4 truck deliveries for the total project volume. 4 truck less reduce emission to 106 kg until 2027. ~5% reduction in transport emission compared with 2024	The implementation has been carried out and is being continuously maintained to ensure that the achieved reduction level is sustained in the long term.
Increase pallet volume	**Target**: reduce packaging, more charger to fit on a pallet, higher transport volume, less driven miles and thus lower CO_2 emissions **Planning**: adjustment of carton dimension, less plastic and Styrofoam	Supplier	Q4/2024		Implemented in September and has led to an expected reduction
Measure CO_2 emission for delivery of goods	**Target:** reduce actual CO_2 emission per truck delivery **Planning**: Agree with forwarder on tracking of emissions per truck	Supplier	Q2/2025		We are still relying on assumptions at this stage. To obtain accurate and

	delivery and close cooperation with logistic companies to achieve more efficient distribution planning				representative data, further in-depth engagement with the current supplier is required—or potentially with a new supplier, should collaboration prove more effective
4.2. TSP to use electrical car for site visit	**Target:** For TSP to shift to electrical van by the end of 2025 **Planning:** To have a contractual agreement: - NoX& CO_2 Zero policy ensuring no local emissions of nitrogen oxides, particulate matter or CO_2 OR any CO_2 reduction policy / initiatives at a company-level - Electrical vehicles by 2025. If not, to compensate the CO2 emissions per project.	Each TSP • Van Gelder • Stam&Co • SPIE • Citytec • Roamler	Q4/2025	Once the electrical cars are in use, this will have zero tailpipe emissions. (1) quarterly meeting to discuss the bundling of chargers (2) CO_2 emissions will be compensated until the electrical cars are implemented.	1.Contractual agreement has been added to all contracts with installation and maintenance partners 2. Electric van is in their strategy although all vans are not currently converted to electrical vans. To track during quarterly meetings. Therefore, plan to compensate from 2026 inc. the 2025 emissions.
To increase the number of chargers to install: better planning and	**Target**: When the ramp up begins, a total of three TSPs to install at least 2 chargers per day per team.	Roll-out manager (NL) in collaboration with TSPs	Q1/2025	Measurable target: 2% CO_2 emissions reduction YoY	The planning does not always go smoothly, however all installation

bundling of chargers during installation	**Planning:** To have a contractual agreement: - Be responsible and accountable of the installation planning to bundle chargers to minimise CO_2 emissions. Roll-out manager monitor during monthly meetings: Ramp up from 1 to 2 charger(s) per day. To monitor through roll-out meetings.			during the annual contract review	partners bundle where they can and at times postpone to ensure they have backlog to install in an environmentally friendly way as much as possible.
4.3. Training for environmental awareness	**Target:** To reduce the emissions during the installation phase **Planning:** To conduct an annual environmental awareness for the technicians: alignment during the meetings.	Each TSP • Van Gelder • Stam&Co • SPIE • Citytec • Roamler	Ongoing	N/A	We have incorporated trainings to minimise the environment during the technical trainings (e.g. turning of the machine, etc.)
4.4. Bundle preventive maintenance	**Target:** To bundle the preventive maintenance and synchronise reactive if preventive maintenance scheduled around the same time. To have CO_2 reduction reporting/commitment from TSPs.	Each TSP • Citytec • Roamler	Ongoing	Measurable target: 2% CO_2 emissions reduction YoY during the annual contract review	Maintained one TSP (Citytec) instead of two TSPs to minimise CO2 emissions.

	Planning: To implement the CO_2 reduction plan in the contract. Continuously monitor through monthly meetings.				
Prioritising remote resolution	**Target:** To maintain remote resolution to 70% for NL **Planning:** To continuously monitor through backend system.	Roll-out Managers	Ongoing	Always monitor and maintain at 70% for remote resolution	Maintained 70% for remote resolution. Continuously monitor to increase.

Figure 12: Plan of Approach of improvement targets within ubitricity's chain (Updated)

Set a goal: We are maintaining our 2% year-on-year reduction target, as the updated 2024-2025 dataset provides a solid and trustworthy foundation. The corrections already show that targeted actions are effective confirming that our goal is both achievable and meaningful.

4.2 Uncertainties and opportunities for improvement in information (5.2. as per Chain Analysis)

The current calculations are still largely based on secondary data and partially on primary data. However, through improved supplier engagement in recent months, we have made progress in enhancing data quality and transparency.

Obtaining comprehensive primary data remains an ongoing effort, and we continue to work closely with partners and suppliers to build a more accurate and representative emissions profile across the chain.

Our updates are shown in blue below.

Opportunity for Improvement

- Improving driving behaviour → Trainings of technicians
- Route optimization → Incorporated in efficient installation planning but further progress needed to fully optimize to minimize CO2 emissions.
- Transport by smaller tracks or by electrical trucks → Still WIP
- All transport companies to calculate the CO_2 amount of their shipment using the latest and most comprehensive global emissions calculator based on the European standard EN16258.

Emissions resulting from work (installation and maintenance) carried out by the TSPs are currently estimates using comparative values from similar used cases as a benchmark. With the introduction of the asset management system, Sitetracker, a comprehensive dashboard provides insight into the entire installation process, which will allow us to track installation times, site assignments and more. → With asset management system, we now have inventory and field asset management, which allows us to plan our routes or track inventories, which will likely contribute to minimizing CO2 emissions where applicable. We will maintain to improve Sitetracker features for continuous improvement.

Opportunity for Improvement:

- Reduce installation time → Reduced the installation process instead to minimize the emissions. Continue to understand whether we can reduce installation time during quarterly meetings with installation partners.
- Increase installation per day → Incorporated by increasing the backlog of CSs and minimizing the going back and forth (minimizing the travel hours).
- Implementation of efficient installation planning → Same as above – incorporating efficient installation planning by increasing the backlog minimizing the travel hours.
- Investigate on reactive maintenance visits per month → Citytec tracks their own driving journey to accurately track the CO2 emissions.
- Regular training → Regular trainings including environmental awareness is incorporated at ubitricity and our partners.
- Sustainability report or equivalent in which shows yearly achievements and reduction of overall emissions by suppliers as a proof point (tracked with quarterly contract meetings)