



# ResiCharge

## High-Level Feasibility Study

Submitted to:

The Ministry of Digital Economy and Entrepreneurship

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# Executive Summary

ResiCharge is a start-up focused on providing residential EV monitoring solutions in Jordan. The primary objective is to offer homeowners a tool to optimize their EV charging experience through a subscription-based model. The key features of ResiCharge include real-time energy consumption monitoring, integration with smart home systems, customizable alerts, and comprehensive historical data analysis.

The feasibility study highlights market potential, with the growing demand for EVs in Jordan and the increasing adoption of home EV chargers. Projected demand for the service starts at 1,250 subscriptions in the first year, growing to 5,600 by the fifth year. Financially, ResiCharge expects to generate JOD 125,000 in revenue in the first year, reaching JOD 500,000 by the fifth year, with subscription costs set at JOD 100 annually. Initial capital expenditures include JOD 15,000 for application development and JOD 1,000 for hardware and IT infrastructure.

Technical feasibility is supported by infrastructure and integration capabilities, ensuring seamless operation and scalability. Operational costs are projected to rise from JOD 52,993 in the first year to JOD 80,191 by the fifth year. The project faces risks related to customer adoption, technology integration, and data security, which are mitigated through market research, strategic partnerships, and stringent cybersecurity measures.

Given the favourable market conditions, technical readiness, and financial projections, it is recommended to proceed with the ResiCharge project. The start-up is well-positioned to capitalize on the increasing EV market in Jordan, offering significant value to residential EV owners.

## I. Introduction

The urgent need to decarbonize the transportation sector in Jordan has become a critical priority, given the sector's significant energy consumption. According to the Ministry of Energy and Mineral Resources (MEMR) energy balance report for 2022, the transportation sector consumed 43% of the country's primary energy. This substantial energy usage highlights the pressing necessity for more sustainable transportation solutions. Concurrently, Jordan has emerged as a leader in electric vehicle (EV) adoption, with 66.5% of new car sales being electric during the first six months of 2024. Despite this positive trend, EV owners face significant challenges in monitoring and managing their energy consumption efficiently.

The impact of inadequate energy monitoring and management for EV owners extends beyond individual inconveniences. Without accurate and real-time data on energy consumption during EV charging events, users struggle to optimize their energy usage, resulting in higher costs and potential strain on the national grid. This lack of efficient energy management not only hampers cost savings for consumers but also undermines broader efforts to enhance energy efficiency and sustainability within the transportation sector. As the number of EVs continues to rise, the need for effective energy monitoring systems becomes increasingly critical to support both individual users and national energy goals. Jordan aims to leverage its initiatives in expanding EV charging infrastructure to catalyse growth in complementary sectors such as renewable energy, smart grids, and battery storage. Electrifying transportation marks a

significant stride towards fostering a more environmentally sustainable economy and diminishing reliance on imported oil.

ResiCharge offers an innovative solution to address these challenges by providing a comprehensive residential EV monitoring system that delivers real-time data on energy consumption during charging events. Seamlessly integrating with existing smart home technologies and EV charging infrastructure, ResiCharge empowers users with a user-friendly interface to monitor their charging habits and make informed decisions. The system's features, including accurate monitoring, customizable alerts, and historical data analysis, enable users to optimize their energy usage, reduce costs, and contribute to a more sustainable future. Additionally, the scalability of ResiCharge allows it to expand from residential users to commercial and industrial sectors, further amplifying its positive impact on energy efficiency and sustainability.

## 2. Market Analysis

Jordan's economic climate is currently driven by a strong emphasis on reducing energy dependency and promoting sustainability. In 2019, the country imported 91% of its primary energy, highlighting a significant reliance on external sources<sup>1</sup>. This dependency, coupled with high gasoline prices at USD 1.27 USD per liter for Octane-90, has prompted the government to actively support electric vehicle (EV) adoption. Through initiatives such as low customs taxes and the introduction of a "Time of Use" electricity tariff for EV charging, the government aims to make electric cars more affordable and appealing to consumers, thereby reducing fossil fuel consumption.

The EV industry in Jordan is experiencing rapid growth, with the country becoming an early adopter of EVs. Over the past decade, Jordan has developed and implemented a supportive regulatory framework for EVs, resulting in 66.5% of new car sales being electric during the first six months of 2024<sup>2</sup>. In the first ten months of 2023 alone, 30,912 EVs were cleared, a significant leap of 137.82% compared to 12,997 vehicles in 2022. This exponential growth is further bolstered by increased lithium-ion battery manufacturing and EV production in China, which has enhanced the affordability and accessibility of EVs in Jordan. Additionally, due to the growing demand for EVs, the Ministry of Energy has issued new instructions for the management and trading of consumed batteries in 2023. The competitive landscape is expanding, with more EV manufacturers and smart home technology companies entering the market. Regulatory support, such as the recently introduced "Time of Use" electricity tariff, enhances the industry's potential for continued growth. Currently, electric and hybrid vehicles constitute 18.5% of Jordan's total vehicle fleet, underscoring the significant market penetration of these technologies<sup>3</sup>.

Industry analysts predict that by 2030, investments in Jordan's EV charging market will exceed \$2 billion. The expansion of Jordan's charging infrastructure will be pivotal in achieving the

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<sup>1</sup> <https://jsf.org/uploads/2022/12/energy.pdf>

<sup>2</sup> [https://jordantimes.com/news/local/electric-vehicles-clearances-12-first-half-2024#google\\_vignette](https://jordantimes.com/news/local/electric-vehicles-clearances-12-first-half-2024#google_vignette)

<sup>3</sup> [Electric cars make up over 18% of Jordan's roads, increase in demand.](#)

nation's ambition to lead in e-mobility and sustainable transportation across the Middle East. The outlook for electric vehicles in Jordan appears promising<sup>4</sup>.

Several economic indicators are pivotal to the success of ResiCharge:

- The high rate of EV adoption, with 106,590 electric vehicles registered by June 2024 according to the Zarqa Free Zone Authority, signifies a growing market for EV-related technologies.
- The high cost of imported gasoline emphasizes the economic advantages of transitioning to electric vehicles.
- The supportive regulatory environment, characterized by low customs taxes and the new "Time of Use" electricity tariffs, creates favourable conditions for the adoption of EV monitoring systems.

These factors, combined with Jordan's overall trend towards sustainability and energy independence, provide a supportive macroeconomic context for the growth and success of ResiCharge.

ResiCharge targets homeowners in Jordan who own electric vehicles (EVs) and seek advanced monitoring solutions for their charging needs. The target demographic primarily consists of middle to upper socioeconomic classes, reflecting those willing to invest in EV technology for its economic, convenience, and environmental benefits. EV adoption is concentrated in urban areas, particularly in cities like Amman, where residents prioritize sustainable living and technological innovation. Home EV chargers are increasingly popular among this demographic due to their convenience and cost-effectiveness, allowing users to charge overnight when utility rates are lower.

The preference for home chargers underscores a need for solutions that integrate seamlessly with existing smart home technologies, offering users greater control and efficiency in managing their energy usage. Customers exhibit sensitivity to price, seeking cost-effective solutions that deliver substantial value through enhanced functionality and long-term savings on energy expenses<sup>5</sup>.

In the current market, Tesla and Schneider Electric are prominent suppliers of residential EV chargers in Jordan, offering Level 2 chargers with IEC 62196 Type 2 charging plugs<sup>6</sup>. These companies have established strong market positions based on their brand reputation, product reliability, and compatibility with global EV standards. Traditional EV charging installers typically provide basic energy consumption monitoring through regular meters, lacking the detailed insights offered by ResiCharge.

ResiCharge distinguishes itself by providing a range of services tailored to the needs of electric vehicle (EV) owners in Jordan. In addition to basic energy consumption monitoring, ResiCharge offers real-time data analytics, allowing users to optimize their charging schedules and reduce costs efficiently. The platform integrates seamlessly with popular smart home systems, making charging data easily accessible through a mobile app. This user-friendly access enables users to make informed decisions about their energy usage, promoting efficiency and

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<sup>4</sup> <https://www.acecharger.com/news/electric-vehicle-charging-infrastructure-expands-in-jordan/>

<sup>5</sup> Shalalfeh, Laith, et al. "Electric Vehicles in Jordan: Challenges and Limitations." *Sustainability*, vol. 13, no. 6, 1 Jan. 2021, p. 3199, [www.mdpi.com/2071-1050/13/6/3199/htm](http://www.mdpi.com/2071-1050/13/6/3199/htm), <https://doi.org/10.3390/su13063199>.

<sup>6</sup> <https://www.acecharger.com/news/electric-vehicle-charging-infrastructure-expands-in-jordan/>

sustainability. By emphasizing advanced technology and user-centric design, ResiCharge enhances the EV ownership experience and establishes itself as a leader in the growing market for residential EV monitoring solutions in Jordan.

Based on conservative business projections, ResiCharge anticipates reaching 1,000 users by its 5th year of operation, driven by the increasing adoption of EVs and favourable market dynamics. As EV ownership patterns and statistics continue to grow positively in Jordan, ResiCharge is well-positioned to capitalize on the expanding market for residential EV monitoring solutions.

### 3. Business Model

ResiCharge is well-positioned to address the growing need for residential EV monitoring solutions through a subscription-based business model tailored specifically for B2C residential home users. In its first five years, ResiCharge will focus on establishing subscriptions as its main revenue source, offering homeowners advanced tools to enhance their EV charging experience. Subscribers will benefit from continuous, real-time monitoring of energy consumption during charging sessions, gaining accurate insights into their usage patterns and costs. Personalized alerts will inform users of charging events, energy thresholds, and potential issues, enabling proactive management of energy usage and expenses. Additionally, ResiCharge's ability to store and analyse historical charging data will help users identify trends, optimize charging schedules, and make informed decisions to reduce energy costs over time.

Beyond its core functionalities, ResiCharge operates as a platform that integrates into users' daily lives. Through integration with popular smart home systems, homeowners can conveniently access charging data remotely via mobile app. This connectivity not only enhances user convenience but also supports ResiCharge's role as a central hub for managing EV charging activities. The platform's user-friendly interface and intuitive design ensure that homeowners can navigate and utilize its features effortlessly, promoting widespread adoption and sustained engagement.

By initially concentrating on the B2C residential market, ResiCharge seeks to attract homeowners in Jordan who need reliable and advanced solutions for monitoring their EV charging needs. This strategic focus addresses current market demands and establishes ResiCharge as a leader in promoting efficient and cost-effective EV charging practices among homeowners.

Revenues will be generated through subscription-based services. Homeowners will subscribe to ResiCharge's platform. This would include a one-time setup of the monitoring equipment which consists of electrical circuit breaker, a smart meter with internet connectivity, a contactor, and an overload protector, all housed in a locked electric panel.

Key personnel include the Chief Technology Officer (CTO), driving technological development and integration efforts to maintain ResiCharge's leadership in residential EV monitoring. The Business Development Manager spearheads partnerships with EV dealerships and importers and smart home technology providers, expanding market reach and ecosystem

growth. The Technician oversees installation, maintenance, and customer support, ensuring seamless operation and customer satisfaction.

By leveraging these strategic elements, ResiCharge aims to establish itself as the premier provider of residential EV monitoring solutions in Jordan, enhancing the efficiency and sustainability of EV charging experiences for homeowners across the country.

### Analysis of Revenue Streams:

The analysis of ResiCharge's revenue streams over the projected five years reveals a promising trajectory for both subscription quantities and revenues, considering a the subscription price of JOD 100. the number of subscriptions shows growth year-over-year, starting at 1250 in year 1 and reaching 5,600 by Year 5. This steady increase indicates market acceptance and adoption of ResiCharge among residential EV owners in Jordan and accounts for repeat subscribers year-on-year. Concurrently, the revenue projection demonstrates growth, with subscription revenues climbing from JOD 125,000 in Year 1 to JOD 560,000 in Year 5. This upward trend underscores the scalability of ResiCharge's subscription-based revenue model, driven by expanding customer acquisition and retention despite the conservative pricing approach. The analysis highlights ResiCharge's targeted penetration into the market, supported by its ability to capture and sustain a growing customer base while maintaining a sustainable pricing strategy that aligns with market expectations and business profitability goals.

Table 1: Revenue projection

Description / Year	1	2	3	4	5
Projected Demand (Quantity) Subscription	1,250	2,100	3,500	4,200	5,600
Price / Unit Subscription	100	100	100	100	100
<b>Sub-total Subscription</b>	125,000	210,000	350,000	420,000	560,000
<b>Total Revenues</b>	125,000	210,000	350,000	420,000	560,000

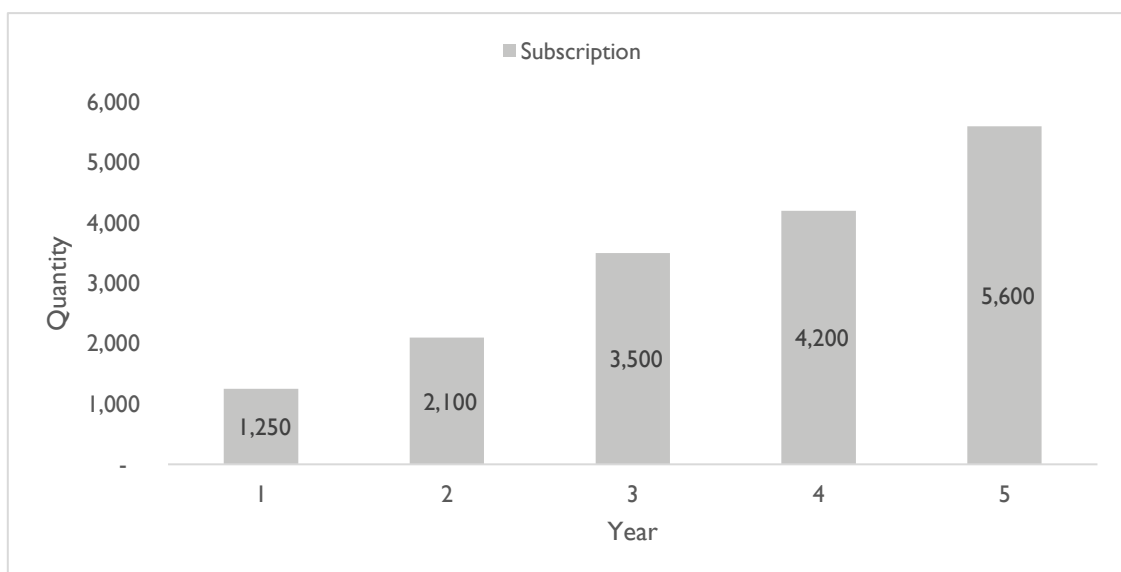


Figure 1: Product Mix by Quantity



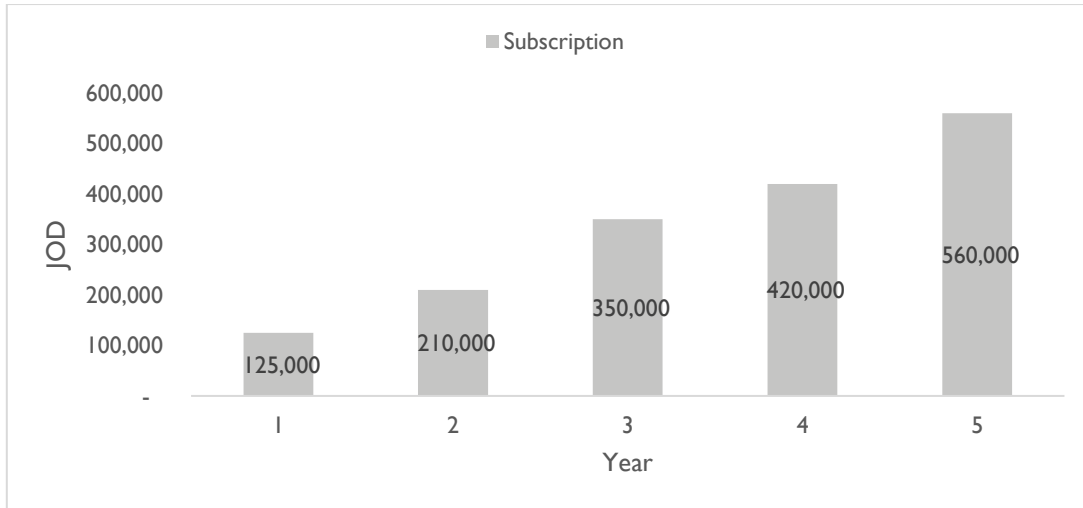


Figure 2: Product Mix by Revenue

## 4. Technical Analysis

ResiCharge anticipates a steady increase in demand for its monitoring units, starting from 1,250 units in Year 1 to 5,600 units in Year 5. This growth mirrors rising consumer adoption of residential EV monitoring solutions driven by increasing EV ownership and environmental awareness.

The cost of goods sold (COGS) per unit declines over the forecast period due to economies of scale and enhanced operational capacity, resulting in total COGS scaling proportionally with sales volume—from JOD 87,500 in Year 1 to JOD 245,000 in Year 5. This consistent COGS reflects efficient cost management and scalability, supporting ResiCharge's profitability as sales expand.

Table 2: Cost of Goods Sold – Five Year Projection

Description / Year	1	2	3	4	5
Projected Demand (Quantity) Subscription	1,250	2,100	3,500	4,200	5,600
COGS / Unit Subscription	70	58.3	50	50	44
<b>Sub-total Subscription</b>	87,500	122,500	175,000	210,000	245,000
<b>Total COGS</b>	87,500	122,500	175,000	210,000	245,000

The operational expenditure (OpEx) table for ResiCharge over five years demonstrates a financial approach aimed at supporting steady operational growth and market expansion. Higher allocations towards advertising, particularly increasing from JOD 1,200 in year 1 to JOD 2,000 from year 2 onwards, indicate strategic efforts to expand market reach and attract subscribers. The web hosting fees for the mobile app and website are budgeted for at JOD 2,000 per year. Overall, the incremental growth in OpEx from JOD 52,993 in year 1 to JOD 80,191 in year 5 signifies ResiCharge's strategy to scale operations while managing costs, essential for sustaining competitiveness in the residential EV monitoring sector.

Table 3: Operational Expenditures – five-year projection

Description / Year	1	2	3	4	5
Rental Fees	2,400	2,400	2,400	2,400	2,400
Electricity/Water	600	600	600	600	600
Registration fees	650	650	650	650	650
Tools	150	150	150	150	150
Transportation	2,400	2,400	2,400	2,400	2,400
Telecommunication	1,200	1,200	1,200	1,200	1,200
Webhosting fees	2,000	2,000	2,000	2,000	2,000
Advertising	1,200	2,000	2,000	2,000	2,000
Legal & Accounting Fees	2,400	2,400	2,400	2,400	2,400
<b>Sub-total OpEx</b>	<b>48,175</b>	<b>59,900</b>	<b>62,351</b>	<b>68,969</b>	<b>72,901</b>
Other Costs	4,818	5,990	6,235	6,897	7,290
<b>Total OpEx</b>	<b>52,993</b>	<b>65,890</b>	<b>68,586</b>	<b>75,865</b>	<b>80,191</b>

Human resources: this section provides essential details regarding human resources management for ResiCharge. It outlines key financial and organizational aspects crucial for budgeting and operational planning. Additionally, the inclusion of a 14.25% company contribution to social security and a health insurance provision of JOD 300 per person highlights ResiCharge's dedication to employee welfare and statutory obligations.

Table 4 : Manpower recruitment plan – five-year projection:

Title / Year	1	2	3	4	5
Chief Technology Officer	1	1	1	1	1
Business Development Manager	1	1	1	2	2
Technician	0	0	1	1	1
<b>Cumulative Number of HR</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>4</b>

The manpower total cost table reflects the planned growth in team size and salaries. This supports employee retention and the accumulation of institutional knowledge.

Table 5: Manpower total cost – five-year projection

Title / Year	1	2	3	4	5
Chief Technology Officer	18,000	18,900	19,845	20,837	21,879
Business Development Manager	7,200	8,400	9,600	12,000	14,400
Technician	4,800	12,000	12,000	14,400	14,400
<b>Total HR Salaries</b>	<b>30,000</b>	<b>39,300</b>	<b>41,445</b>	<b>47,237</b>	<b>50,679</b>
Social Security Cost	4,275	5,600	5,906	6,731	7,222
Health Insurance Cost	900	1,200	1,200	1,200	1,200
<b>Total HR Cost</b>	<b>35,175</b>	<b>46,100</b>	<b>48,551</b>	<b>55,169</b>	<b>59,101</b>

The capital expenditures as shown below can be mostly attributed to the application development which will be outsourced to a reliable third party that has the practical expertise in working on multistakeholder projects.

Table 6: Capital Expenditures Cost – five-year projection

Description / Year	0	1	2	3	4	5
Application Development	15,000					
Hardware and IT Infrastructure	1,000					
<b>Total CapEx</b>	<b>16,000</b>	-	-	-	-	-

ResiCharge's CapEX focuses primarily on initial application development and setting up necessary hardware and IT infrastructure in year zero. The application development involves creating a user-friendly and feature-rich mobile application that integrates with smart home systems and provides real-time monitoring and data analytics for EV charging sessions. This investment is crucial for ensuring the platform's functionality, security, and scalability as it grows its user base.

The hardware and IT infrastructure CapEX covers the costs associated with setting up servers, cloud services, and IT systems necessary for hosting the application, managing data securely, and ensuring seamless operation. These investments are essential for supporting ResiCharge's subscription-based business model, where reliability and data security are paramount to maintaining customer trust and satisfaction.

Over subsequent years (years 1 to 5), no additional CapEX is planned specifically for application development or infrastructure, reflecting the front-loaded nature of the investment in the start-up phase. Instead, operational expenses and potential future upgrades will be managed through operational budgets and revenue reinvestment strategies. This strategic approach ensures that ResiCharge can effectively deliver its services while maintaining financial sustainability and scalability in the competitive residential EV monitoring market.

## 5. Financial Analysis

### 5.1 Financial Study Assumptions

The feasibility study is based on the following key assumptions:

**Discount Rate:** The study employs a conservative discount rate of 14%, reflecting a cautious approach to valuation.

**Financing Structure:** The project is entirely financed by equity. This conservative approach avoids the financial leverage and thus underestimates project value, given the lower cost of debt compared to equity.

**Terminal Value:** The project assumes a zero-terminal value at the end of year five, aligning with the study's conservative outlook.

**Cash Flow Projection:** Cash flows beyond year five are excluded from the analysis, focusing on the initial project phase.

**Tax Rate:** The assumed tax rate of 20% complies with Jordan's income tax law.

**Depreciation Rate:** Capital expenditure (CapEx) is depreciated at an annual rate of 20%. Any deviation from this rate may impact projected profitability but not project feasibility, as depreciation is a non-cash expense.

### Working Capital Assumptions

Operational liquidity requirements are guided by the following assumptions:

- **Cash Reserves:** The project will maintain cash equivalent to 30 days of projected annual operational expenses, ensuring robust liquidity management.
- **Accounts Receivable (A/R) Collection Period:** The average collection period for receivables is 45 days, reflecting expected credit sales conversion into cash.
- **Accounts Payable (A/P) Payment Period:** The average payment period for payables is 0 days, indicating the timeframe for settling supplier obligations.
- **Inventory Management:** Inventory levels will be maintained to cover an average of two months of sales quantity, ensuring optimal stock levels to meet demand efficiently.

**Capital expenditures** expected to be incurred in the first year were included as part of the initial costs of the project.

**Provisions** were made within the initial cost to cover any potential negative net free cash flow that may arise during the first five years of operation, if needed.

## 5.2 Financial Study:

### 5.2.1 Projected Working Capital

Table 7: Working capital projection (JOD)

Description / Year	1	2	3	4	5
<b>Cash</b>	4,416	5,491	5,716	6,322	6,683
<b>Accounts Receivable (A/R)</b>	15,625	26,250	43,750	52,500	70,000
<b>Inventory</b>	14,583	20,417	29,167	35,000	40,833
<b>Net Working Capital</b>	34,624	52,158	78,632	93,822	117,516
<b>Change in Working Capital</b>	-	17,533	26,475	15,190	23,694

This table shows that the net working capital needed for the project for the first year of operation is JOD 34,624, which has to increase steadily year over year to reach JOD 117,516 in the fifth year of operation. The steady increase in the working capital comes to cover the rapid increase in the project operations and mainly the increase in the projected revenues.

## 5.2.2 Project Initial Cost

The project's initial cost is projected to be JOD 66,117, comprising JOD 16,000 as CapEx, JOD 15,493 as provisions for the first-year negative free cash flow and JOD 34,624 as net working capital.

Table 8: Initial Cost Summary (JOD)

Description / Year	JOD
CapEx	16,000
Provisions for first year(s) negative free cash flows	15,493
Net Working Capital	34,624
<b>Total Initial Cost</b>	<b>66,117</b>

## 5.2.3 Projected Income Statement

The projected income statement indicates that the project will experience a loss of JOD 18,693 in the first year of operation. However, net profits are expected to be positive and increase gradually over the study period starting from the second year of operation, reaching JOD 185,287 in the fifth year of operation.

Table 9: Projected Income Statement (JOD)

Description / Year	1	2	3	4	5
Total Revenues	125,000	210,000	350,000	420,000	560,000
COGS	87,500	122,500	175,000	210,000	245,000
<b>Gross Profit</b>	<b>37,500</b>	<b>87,500</b>	<b>175,000</b>	<b>210,000</b>	<b>315,000</b>
OpEx	52,993	65,890	68,586	75,865	80,191
<b>Net Profit Before Tax and Depreciation</b>	<b>-15,493</b>	<b>21,610</b>	<b>106,414</b>	<b>134,135</b>	<b>234,809</b>
Depreciation	3,200	3,200	3,200	3,200	3,200
<b>Net Pprofit Before Tax</b>	<b>-18,693</b>	<b>18,410</b>	<b>103,214</b>	<b>130,935</b>	<b>231,609</b>
Tax Expense	-	-	20,586	26,187	46,322
<b>Net Profit</b>	<b>-18,693</b>	<b>18,410</b>	<b>82,628</b>	<b>104,748</b>	<b>185,287</b>

In the first year of operation, the project is expected to generate a negative profit margin of 15.0%. However, the gross and net profit margins in the following years are expected to be positive and increase gradually. In the fifth year of operations, the gross profit margin is expected to be 56.3%, and the net profit margin is 33.1%.

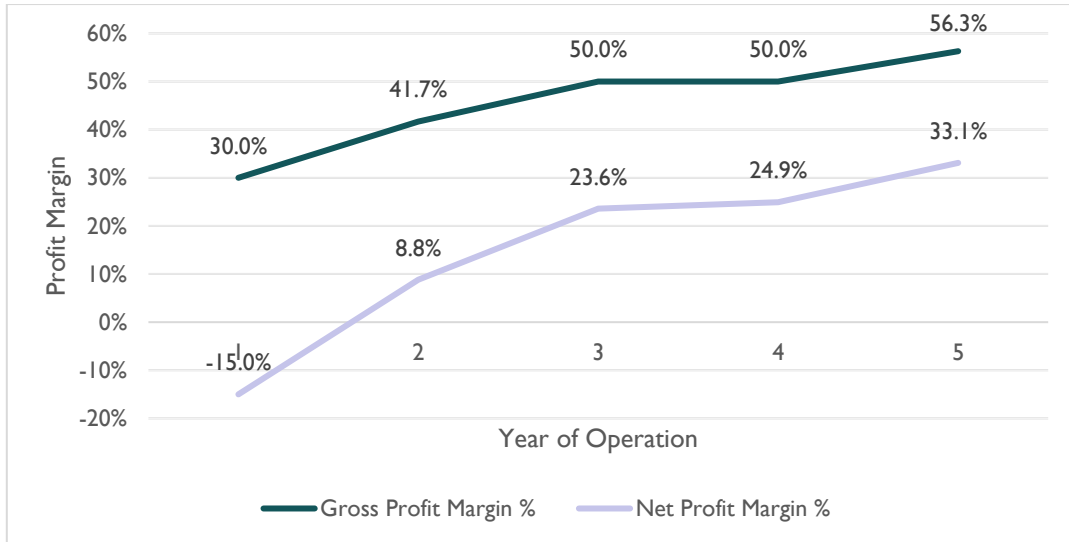


Figure 3: Gross vs Net Profit Margin

On the asset management side, the study shows that the return on investment will increase steadily from -36.9% in the first year of operation to 366.0% in the fifth year.

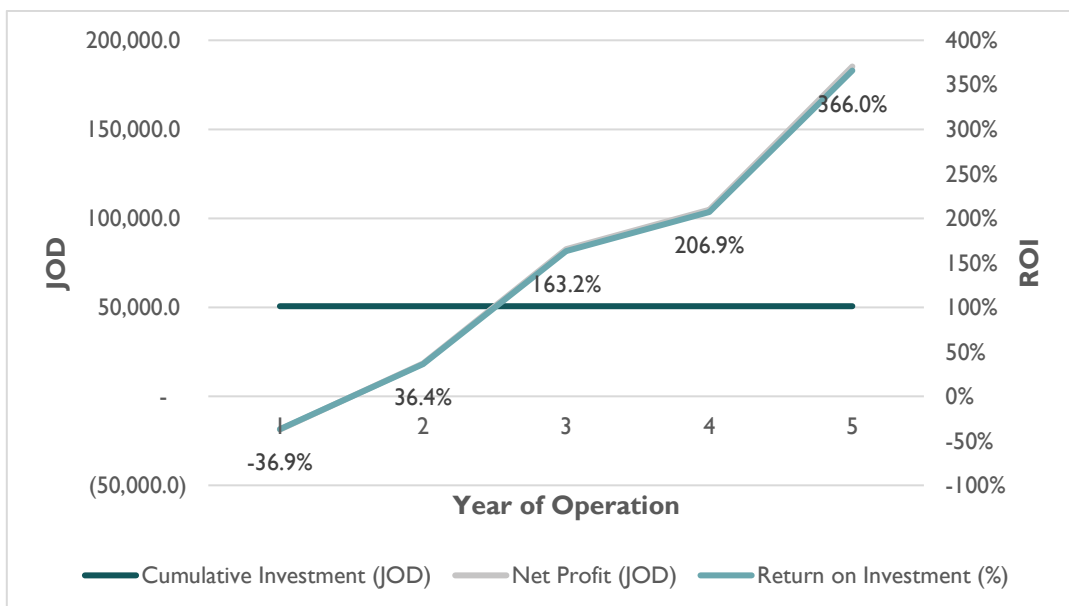


Figure 4: Return on Investment

## 5.2.4 Projected Free Cash Flow Statement

The table below demonstrates that the project will generate a negative free cash flow in its first year of operation, JOD 15,493. However, in the following years, it is expected to generate positive free cash flows that increase gradually to reach JOD 164,793 in its fifth year of operation.

Table 10 : Free Cash Flow (FCF) Projection (JOD)

Description / Year	0	1	2	3	4	5
<b>Cash-In Flow</b>						
Net Profit		-18,693	18,410	82,628	104,748	185,287
Depreciation		3,200	3,200	3,200	3,200	3,200
Injected Capital	66,117					
<b>Total Cash-In Flow (JOD)</b>	<b>66,117</b>	<b>-15,493</b>	<b>21,610</b>	<b>85,828</b>	<b>107,948</b>	<b>188,487</b>
<b>Cash-Out Flow</b>						
Initial Cost	50,624	-	-	-	-	-
Changes in Working Capital		-	17,533	26,475	15,190	23,694
<b>Total Cash-Out Flow (JOD)</b>	<b>50,624</b>	<b>-</b>	<b>17,533</b>	<b>26,475</b>	<b>15,190</b>	<b>23,694</b>
<b>Free Cash Flow (JOD)</b>	<b>15,493</b>	<b>-15,493</b>	<b>4,077</b>	<b>59,353</b>	<b>92,758</b>	<b>164,793</b>

Based on these results, the project's feasibility indicators demonstrate its viability, with a net present value of JOD 103,999.7 and a profitability index of 2.57. Moreover, the project's internal rate of return (IRR) is expected to be 40.60%, indicating feasibility is not sensitive to changes in market conditions.

Feasibility Indicators	
Net Present Value (NPV)	104,000
Profitability Index (PI)	2.57
Internal Rate of Return (IRR)	40.60%

### 5.3 Sensitivity Analysis

To assess the project's sensitivity to market conditions, a sensitivity analysis was conducted involving six unfavourable scenarios:

- Decrease projected revenues by 5% while keeping other variables constant.
- Decrease projected revenues by 10% while keeping other variables constant.
- Increase operational expenditure by 5% while keeping other variables constant.
- Increase operational expenditure by 10% while keeping other variables constant.
- Increase initial costs by 5% while keeping other variables constant.
- Increase initial costs by 10% while keeping other variables constant.

Table 11: Sensitivity analysis outcomes

Sensitivity Scenario	Net Present Value (NPV)	Profitability Index (PI)	Internal Rate of Return (IRR)
Original Case	104,000	2.57	40.60%
Drop in revenue by 5%	48,996	1.62	25.75%
Drop in revenue by 10%	-3,252	0.69	6.53%
Increase in OpEx by 5%	91,682	2.33	36.82%
Increase in OpEx by 10%	76,744	2.03	32.27%
Increase in initial cost by 5%	85,201	2.00	33.07%
Increase in initial cost by 10%	67,955	1.67	27.73%

The sensitivity analysis shows that, in general, the project is feasible and not sensitive to unfavourable market conditions. Apart from the 10% drop in the revenue's scenario, the

project's economic feasibility is strong and viable under all the above-mentioned scenarios. The drop in revenues has a more dramatic impact on the project viability than the increase in the OpEx or initial cost by the same magnitude. It is recommended that investors check and further study the market to ensure that the projected revenues are achievable within the thresholds of the proposed initial cost and operational expenditures.

## 6. Integration with Other Sectors

ResiCharge, as a start-up specializing in residential EV monitoring systems, is poised to integrate effectively with various sectors to amplify its impact and market reach. By forging partnerships with electric vehicle (EV) manufacturers, ResiCharge can enhance its product offering through seamless compatibility and joint promotional efforts. Collaborations with smart home technology providers will enable ResiCharge to integrate its monitoring systems with existing home automation platforms, offering users a unified and intuitive experience. Moreover, strategic alliances with energy utilities can facilitate innovative tariff structures and incentive programs for EV owners, promoting sustainable energy consumption practices. These integrations not only broaden ResiCharge's market presence but also reinforce its value proposition by leveraging synergies across related sectors, ultimately positioning the start-up as a pivotal player in advancing residential EV adoption and sustainable living initiatives.

## 7. Entrepreneur Persona

The Entrepreneur Persona for ResiCharge embodies a blend of technical expertise and industry knowledge essential for driving innovation in residential EV charging solutions. With a background in electrical engineering or computer science and experience in smart home and IoT technologies, the entrepreneur brings a deep understanding of integrating advanced systems into everyday environments. Their familiarity with the electric vehicle market enables strategic decision-making and product development aligned with market demands.

Critical attributes include a penchant for innovative thinking, consistently implementing cutting-edge technologies to enhance user experiences and operational efficiencies. Proficiency in data analytics equips them with the ability to derive meaningful insights from charging data, enabling optimized energy management solutions. Additionally, their cybersecurity awareness ensures robust data security protocols are implemented, safeguarding user information and maintaining trust in the technology ecosystem.

## 8. Stakeholders

Key stakeholders of ResiCharge include residential EV owners, who benefit directly from enhanced charging monitoring and optimization services, contributing to cost savings and environmental sustainability. Government plays a pivotal role through regulatory support and incentives for EV adoption and smart home technologies, influencing market dynamics and consumer behaviour.



Technology partners, including hardware suppliers and IT service providers, are essential for ResiCharge's operational infrastructure, ensuring robust and reliable service delivery. Financial stakeholders such as investors and lenders are interested in the business's growth potential and financial performance, supporting scalability and market expansion. Lastly, environmental advocates and NGOs are stakeholders who endorse ResiCharge's role in promoting greener transportation solutions and reducing carbon footprints through innovative technology solutions. Each stakeholder group contributes to ResiCharge's ecosystem, driving its mission to revolutionize residential EV charging experiences.

## 9. Risk Assessment and Mitigation

Risk	Impact	Likelihood (High/Medium/Low)	Risk Mitigation Technique
Customer Adoption Risk	High impact due to limited market	Medium	Conduct extensive market research, offer trial periods, and pilot programs to demonstrate value and build trust.
Technology Integration Risk	Medium	High	Invest in robust API development, conduct thorough integration testing, and form strategic tech partnerships.
Data Security and Privacy Risk	High	Medium	Implement stringent data security measures, conduct regular audits, and invest in cybersecurity infrastructure.
Operational Scalability Risk	High	Medium	Develop scalable infrastructure and operational processes, plan for rapid growth scenarios, and optimize resource allocation.
Regulatory Compliance Risk	Medium	Medium	Stay updated with regulatory requirements, engage legal counsel, and proactively manage compliance challenges.
Financial Sustainability Risk	High	Low to Medium	Develop a robust financial forecast, diversify revenue streams, and secure long-term funding or investment.
Supply Chain Disruption Risk	Medium	Low to Medium	Identify alternative suppliers, maintain strategic inventory levels, and establish relationships with reliable suppliers.

To ensure the successful launch and sustainable growth of ResiCharge, several risk mitigation techniques are essential. Conducting extensive market research and offering trial periods or pilot programs can significantly mitigate customer adoption risks by demonstrating the platform's value and building user trust. Investing in robust API development, thorough

integration testing, and forming strategic technology partnerships will address potential technology integration risks, ensuring seamless operation and compatibility with existing systems. Implementing stringent data security measures, conducting regular audits, and investing in cybersecurity infrastructure are critical to protecting user information and maintaining trust, thereby mitigating data security and privacy risks.

Operational scalability can be effectively managed by developing scalable infrastructure and processes, planning for rapid growth scenarios, and optimizing resource allocation. Staying updated with regulatory requirements, engaging legal counsel, and proactively managing compliance challenges will help mitigate regulatory compliance risks. Additionally, maintaining a robust financial forecast, diversifying revenue streams, and securing long-term funding or investment will address financial sustainability risks. Identifying alternative suppliers, maintaining strategic inventory levels, and establishing relationships with reliable suppliers can reduce the impact of supply chain disruptions.

The sensitivity analysis highlights that a 10% drop in projected revenues results in a negative Net Present Value (NPV) and a profitability index (PI) of less than 1. A negative NPV indicates that the project's returns do not cover the initial investment, suggesting it is not financially viable under these conditions. A PI of less than 1 means that the project's benefits are not sufficient to justify the costs, making it unattractive to investors. This underscores the importance of achieving the projected revenue targets and maintaining stringent cost controls to ensure the project's financial feasibility.

## 10. Conclusion

In conclusion, the project demonstrates promising feasibility indicators under very restrictive assumptions. Nonetheless, investors are advised to conduct additional analysis on projected demand, initial costs, and operational expenses to mitigate potential risks associated with adverse market conditions that could jeopardize its viability.

### **Disclaimer**

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Founders and investors considering this project are advised to conduct further analysis on projected adoption rates, development costs, and ongoing operational expenses. This additional scrutiny will help mitigate potential risks related to technology challenges, changes in regulations, market penetration, and competitive pressures.

The report does not constitute any form of commitment or recommendation on the part of MoDEE or Istdama Consulting.