Work Performance Information Scope

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Work Performance Information (Scope)

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Work Performance Information (Scope): Self-Charging Electric Vehicles (SCEV) Project

1. Executive Summary

This document outlines the scope performance for the Self-Charging Electric Vehicle (SCEV) project, detailing progress against defined

deliverables and identifying areas requiring attention. The project aims to develop a revolutionary electric vehicle that significantly reduces reliance on traditional charging infrastructure through integrated energy harvesting technologies. This report focuses on the completion of Phase 1 milestones.

2. Project Scope Definition

The overall project scope encompasses the research, design, development, and testing of a self-charging electric vehicle incorporating advanced photovoltaic body panels, a regenerative suspension system, thermoelectric generation (TEG), and an AI-powered energy management unit (EMU). The initial phase (Phase 1) focused on feasibility studies, prototype development, and preliminary EMU development.

3. Scope Performance Metrics (Phase 1)

Key Performance Indicators (KPIs):

KPI	Target	Actual	Status	Notes
M1: Component Feasibility & Simulation Completion	100% by [Date]	100% by [Date]	Completed	Simulations exceeded initial energy generation projections.
M2: Prototype Development Completion	100% by [Date]	95% by [Date]	Minor Delay	Minor setbacks encountered in perovskite solar cell integration. Remediation

KPI	Target	Actual	Status	Notes
				plan implemented.
M3: Test Mule Integration Completion	100% by [Date]	85% by [Date]	Moderate Delay	Integration of regenerative suspension system proved more complex than anticipated.
M4: EMU v1.0 Completion	100% by [Date]	100% by [Date]	Completed	Successfully developed and tested. Data logging functionality fully operational.

Scope Creep: No significant scope creep detected during Phase 1. Minor adjustments were made to the prototype development timeline due to unforeseen technical challenges. These were managed through change requests (CRs) and documented in the project change log.

4. Deliverable Status (Phase 1)

Completed Deliverables:

- **M1 Deliverables:** Comprehensive feasibility reports for photovoltaic, kinetic, and thermoelectric technologies; detailed simulation models demonstrating energy generation under various conditions.
- **M2 Deliverables:** Functional prototypes of advanced photovoltaic body panel section, a single regenerative shock absorber, and a TEG

unit.
- **M4 Deliverables:** Fully functional EMU v1.0 prototype capable of data acquisition and logging from all integrated systems.

In-Progress Deliverables (Phase 2):

- Completion of Test Mule Integration (M3).
- Development of advanced EMU control algorithms (Phase 2).
- Full vehicle integration and testing.

5. Performance Analysis

Phase 1 demonstrated the feasibility of the core technologies. While some minor delays occurred in M2 and M3 due to unforeseen technical complexities, these were effectively addressed through revised timelines and resource allocation. The project remains within the approved budget.

6. Recommendations

- **Prioritize M3 completion:** Focus resources on resolving the integration challenges of the regenerative suspension system to move into the full vehicle integration phase.
- **Refine EMU Development Plan:** Begin development of advanced control algorithms for the EMU (Phase 2) to ensure seamless integration with the harvested energy sources.
- **Continuous Monitoring:** Maintain rigorous monitoring of KPIs to ensure the project stays on track and within budget.

7. Next Steps

The project will proceed to Phase 2, focusing on the complete integration of the developed components into the test mule vehicle, development of the advanced EMU control algorithms, and rigorous testing under various operating conditions. A detailed Phase 2 Work Performance Information document will be produced upon completion of that phase.