Service Level Agreement

Mobility & Logistic Services Department

and

Research & Development Center Department

Date: June, 2024

Table of Contents

1. Definitions

Abbreviations and key terms used in this Agreement have been defined in the tables below:

Table 1. Abbreviations

Abbreviation	Definition
BPRC	Business Plan Review Committee
CRM	Customer Relationship Management System
CSD	Consulting Services Department
DC	Direct Charge
R&DC	Research and Development Center
EDC	Engineering Design Change
ETC	Estimated Time to Completion
GHG	Greenhouse Gas
G.I.	General Instruction
KPI	Key Performance Indicator
LFC	Long Form Contract
LOTO	LOTO
M&LSD	Mobility and Logistic Services Department
MI&TU	Mobility Innovation and Technology Unit
MOC	Management of Change
MoM	Minutes of Meeting
OEM	Original Equipment Manufacturer
PM	Preventive Maintenance
PO	Purchase Order
PPE	Personal Protective Equipment
SFC	Short Form Contract
SLA	Service Level Agreement
TT	Transport Technologies
FCEV	Fuel Cell Hydrogen Powered Vehicle

Table 2. Key Terms

Key Term	Definition
Agreement	Written and binding document signed between the two parties

2. General Terms & Conditions

2.1. Parties

This Agreement is entered by and between:

Mobility and Logistic Services Department (hereinafter referred to as "M&LSD"), represented by Mr. **Monahi M. Al Utaibi,** as Mobility and Logistic Services Department Director - and - Research and Development Center Department (hereinafter referred to as "R&DC"), represented by Dr. **Faisal D. Al Otaibi**, as Research and Development Center Department Director.

2.2. Scope

This Service Level Agreement (SLA) formalizes the ongoing collaborative endeavors between the Mobility and Logistics Services Department (M&LSD) and the Research and Development Center Department (R&DC). For the past several years, these organizations have successfully partnered to implement advanced mobility applications within Aramco operations, showcasing the company's leadership in hydrogen technology through the deployment of clean energy mobility vehicles, including hydrogen-powered vehicles. This SLA elevates the collaboration to a new level, establishing a structured framework for the agreement. It aims to enhance the ongoing partnership and ensure its continued success in advancing sustainable mobility solutions for Aramco.

2.3. Duration

This Agreement commences upon implementation of M&LSD and R&DC is valid for 36 months after the signing date.

2.4. Purpose

The purpose of this Agreement is to define the services and the rules of cooperation for the provision of agreed collaboration in the research field of advance mobility applications, including the expected service levels and the responsibilities of R&DC and M&LSD. In addition, this SLA is meant to streamline the current efforts in testing & piloting advanced mobility technologies & new energy vehicles within Aramco operations, and incorporate fleet modeling to support M&LSD roadmap to net zero. This SLA will service as a general guide for both R&DC & M&LSD to provide all needed resources in order to achieve targeted shared goals.

This SLA also sets the requirements for amendments of services, service demand forecast, performance management, and issue resolution that will ensure effective relationship management.

Compliance of both parties with the rules of cooperation and effective relationship management will enable both M&LSD & R&DC to deliver cost-effective, high-quality, and timely services.

2.5. Roles and Responsibilities

To monitor, coordinate, and facilitate the implementation and supervision of the terms and conditions of this SLA, M&LSD and R&DC shall identify the roles and responsibilities for each department and establish committee representatives:

1. R&DC: Will act as the technical arm to perform various services, including explore applicable advance & new technologies and recommend piloting, testing them in industrial environment. Conduct research for new mobility technologies in line with company strategies. Connect with industry leaders that provide potential solutions in the field of mobility technologies. Support in performing advance data modeling that will drive for more accurate data analysis better visualization. The Committee representatives include:
   - Transport Technologies (TT) R&D Chief Technologist/Manager
   - Carbon Management (CM) R&D Chief Technologist/Manager
   - TT/Engine Combustion Unit Supervisor
   - TT/Strategic Transport Analysis Unit Supervisor (Aramco Americas-Detroit Research Center)
   - CM/Advanced Energy Systems Unit Supervisor
   - CM/ Carbon Capture and Utilization Unit Supervisor
   - CM/ Energy Storage and Renewables Unit Supervisor
2. M&LSD: Will act as the execution arm to provide multiple services: test commercialized mobility applications based on its designed nature. Connect with relevant Aramco entities to pilot potential advanced mobility applications. Create testing process that enables to collect & produce reliable data for future analysis. Highlight any found technical issues to the right entity for action. The Committee representatives include:
   - Engineering & Technical Support Division Manager
   - Mobility Innovation & Technology Unit Supervisor

In addition to the roles and responsibilities, both organizations shall discuss and agree on the other specific cases in order to reach out to mutual agreement that will lead to project success. This include budgeting, contracting, space allocation and other required company typical process and procedures.

2.6. Performance Monitoring and Reporting

To ensure M&LSD and R&DC are being adequately supported by each other, the parties shall establish a process for monitoring and reporting the performance of ongoing projects or pilots between both departments, ensuring transparency, accountability, and continuous improvement in alignment with SLA objectives.

Projects or pilots KPIs will be monitored and reported quarterly in the communication meeting, where KPIs are reviewed and action plans jointly agreed upon.

3. Signatories

Agreed and acknowledged by:

Mobility and Logistic Services Department	Research and Development Center Department
_____	_____
Monahi M. Al Utaibi	**Faisal D. Al Otaibi**
Mobility and Logistic Services Department Director	Research and Development Center Department Director

Appendix A: Service Catalog

1. Development of model-based analysis and prediction tools for GHG emissions

Service Definition	• **SAUDI ARAMCO FLEET MODELING TO QUANTIFY THE IMPACT OF POLICIES AND ADVANCED VEHICLE/FUEL TECHNOLOGIES ON MOBILITY ENERGY DEMAND AND LIFE CYCLE GHG EMISSIONS (e.g., passenger cars, light-duty trucks, heavy-duty vehicles):**	
Service Request and Execution	**Service Request** • **Service request shall be initiated by M&LSD.** **Service Execution** • **Service execution shall be carried out by R&DC.**	

Service Scope	**Service Scope**
	• **Develop a Fleet Model based on real fleet data**
	  ○ **Integrate key factors influencing real-world emissions into the model, such as:**
	  – **Vehicle characteristics (powertrain architecture, engine type, fuel efficiency, age)**
	  – **Driving patterns (speed, acceleration, route topography, etc.)**
	  – **Ambient conditions (temperature, weather)**
	  ○ **Evaluate the accuracy and robustness of the developed tools using real-world data and established emission measurement techniques.**
	  ○ **Design and implement a user-friendly interface, enabling stakeholders to estimate fleet emissions accurately.**
	  ○ **Identification of potential GHG reduction through optimization.**
	• **Explore feasibility of building a mobility model that simulates real-world traffic flow.**
	
	Aramco Americas Strategic Transport Analysis Team (STAT) PI:
	Jinghui Wang, Principal Scientist
	Jinghui.wang@aramcoamericas.com
	
	Service Delivery Time
	• **1 year (January 2025 – December 2015)**	

Roles and Responsibilities	**R&DC Roles and Responsibilities** ○ Develop the fleet model ○ Explore various decarbonization pathways and report ○ Monitor process performance against KPI(s).	**M&LSD Roles and Responsibilities** ○ Provide details about the fleet ○ Provide real-world driving data ○ Monitor process performance against KPI(s).

2. Deployment and demonstration of powertrain, fuel, and lubricant technologies to reduce fleet GHG emissions

Service Definition	• **Deployment and demonstration of powertrain, fuel, and lubricant technologies to reduce fleet GHG emissions**	
Service Levels	**Service Scope** • **Development of a H2-ICE powered demo minibus with certified H2 tanks** • **Development of a homologation strategy for the prototype vehicle** • **Testing and calibration of the prototype vehicle in KSA climate conditions** • **Collaborating to support the internal commercial deployment of such technologies** • **Reporting potential GHG emission savings through H2-ICE vehicles** • **Investigation of the potential for H2-ICE heavy duty for Aramco fleet** • **Explore opportunities for a potential technology sponsorship agreement between M&LSD and RDC for road mobility** **Service Delivery Time** • **18 months**	
Roles and Responsibilities	**R&DC Roles and Responsibilities** ○ Development of the demo vehicle ○ Testing and calibration of the demo vehicle ○ Development of a homologation strategy for the prototype vehicle ○ Monitor process performance against KPI(s)	**M&LSD Roles and Responsibilities** ○ Obtain import permits and securing waivers from SASO ○ Identify routes and routines for demo vehicle testing ○ Support testing ○ Monitor process performance against KPI(s)

3. Construction of Hydrogen Station within Automobile complex (Draft)

Service Definition	• **Construction of Hydrogen Station within Automobile complex**	
Service Levels	**Service Scope** • Design, Procure and Construction of Hydrogen Station. • Identify the type of hydrogen station technology that will be constructed at the automobile complex. • Secure operation & maintenance agreement of the hydrogen station. **Service Delivery Time** • **15 months**	
Roles and Responsibilities	**R&DC Roles and Responsibilities** ○ Development of pilot facility for hydrogen refueling station (HRS) ○ EPC for HRS area ○ Monitor process performance against KPI(s).	**M&LSD Roles and Responsibilities** ○ Management of overall automobile complex site ○ Coordination and support for R&DC's facility for HRS ○ Securing the permits required for the development and operation of overall automobile complex ○ Monitor process performance against KPI(s).

4. Promote and Deploy Hydrogen Fuel Cell powered Vehicles (FCEV)-Draft

Service Definition	• **Promote and deploy Hydrogen Fuel Cell Powered Vehicles (FCEV)**	
Service Levels	**Service Scope** • **Expand existing fleet of Aramco's FCEV's.** • **Showcase Aramco's fleet of FCEV's to delegations, visitors, collaborators, and other visitors.** • **Showcase Aramco's fleet of FCEV's at national and international events** • **Investigate the performance of FCEV's under local conditions** • **Monitor and analyse the hydrogen consumption for each type of FCEV** • **Develop and train Subject Matter Experts in the field of FCEV** **Service Delivery Time** • **36 months**	
Roles and Responsibilities	**R&DC Roles and Responsibilities** ○ Co-ordinate the refueling of hydrogen cars with Air Products and resolve arising issues ○ Analyze hydrogen consumption and performance of vehicles ○ Review reports received from Air Products ○ Monitor process performance against KPI(s).	**M&LSD Roles and Responsibilities** ○ Co-ordinate the refueling of hydrogen buses and cars with Air Products ○ Resolve issues related to fueling station with Air Products ○ Provide access to utilization of hydrogen buses and cars when required by RIC ○ Monitor and record hydrogen consumption data for each type of vehicle ○ Monitor process performance against KPI(s).