

## Roads and Transport Authority (RTA) Dubai

*“RTA is the first transport authority in the Middle East & Africa Region, and leading entity of Dubai Government to achieve ISO 50001:2011 certification for Energy Management System (EnMS) in 2013.”*

*“RTA is the first transport authority in the Middle East & Africa Region, to develop in 2020 a comprehensive plan to achieve Zero emission public transport and related infrastructure in Dubai by 2050 ”*



Roads and Transport Authority Dubai

### Case Study Snapshot

<b>Industry</b>	Government
<b>Product/Service</b>	Public Transportation
<b>Location</b>	Dubai, UAE
<b>Energy performance improvement percentage (2014 - 2021)</b>	In the year 2021, the RTA’s total energy consumption was reduced by 10 % compared to the year 2014
<b>Total energy cost savings (2014 - 2021)</b>	USD 80,724,729
<b>Cost to implement Energy Management System (EnMS)</b>	USD 1,107,356.95
<b>Total energy savings (2014-2021)</b>	3,533,908.29 GJ
<b>Total CO<sub>2</sub>-e emission reduction (2014-2021)</b>	313,610 Metric Tons

### Organization Profile / Business Case

The Roads and Transport Authority (RTA) emerged in November 2005 as a government-owned entity and based in Dubai. RTA plans and provides the requirements of transport, roads and traffic in Dubai, and between Dubai and other Emirates of the UAE and neighboring countries. It sets up regulations, administrative and operational systems relating to its core business, in order to provide an effective and integrated transport system to achieve Dubai's vision and serve its vital interests. The key Responsibilities include - Traffic Safety, Roads Engineering, Roads & Parking, Taxis, Metro and Tram, Public Buses, Marine Transport, Roads Beautification, Registration & Licensing, and Inter-City Transport.

**Vision - The world leader in seamless & sustainable mobility.**

**Mission** - Develop & manage integrated and sustainable roads & transportation systems at a world-class level, and provide pioneered services to all stakeholders for their happiness, and support Dubai’s vision through shaping the future, developing policies and legislations, adopting technologies, innovations & world-class practices and standards.

**Corporate Values** - In our endeavor to achieve our strategic vision and mission at all levels, we observe our values that remain our first and prime reference at all times: Corporate reputation, Pioneering & Competitiveness, Leadership and Teamwork, Happiness and Positive Energy, Innovation and Creativity.

RTA has taken a holistic approach to adopt sustainability measures throughout the organization with a well-defined Sustainability Framework embracing three key pillars i.e. Social, Economic and Environment. To efficiently manage and enforce the implementation of the mentioned environmental pillar and the energy management system across RTA, a

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Green Economy Strategy was established in 2016 with two main strategic themes i.e. the Climate Change and the Resource Efficiency aiming to furnish the pathway towards a low-carbon economy. Consequently, the outcomes from the implementation of the green economy strategy and the energy management system made it possible for RTA to establish the RTA’s Roadmap towards zero emission public transport by 2050.

“Our energy efficiency projects and initiatives are key to achieve our strategic vision of becoming world leaders in seamless and sustainable mobility and support our journey towards a carbon-neutral transport sector.”

-Nasser Abu Shehab, CEO, Strategy & Corporate Governance Sector

## Business Benefits

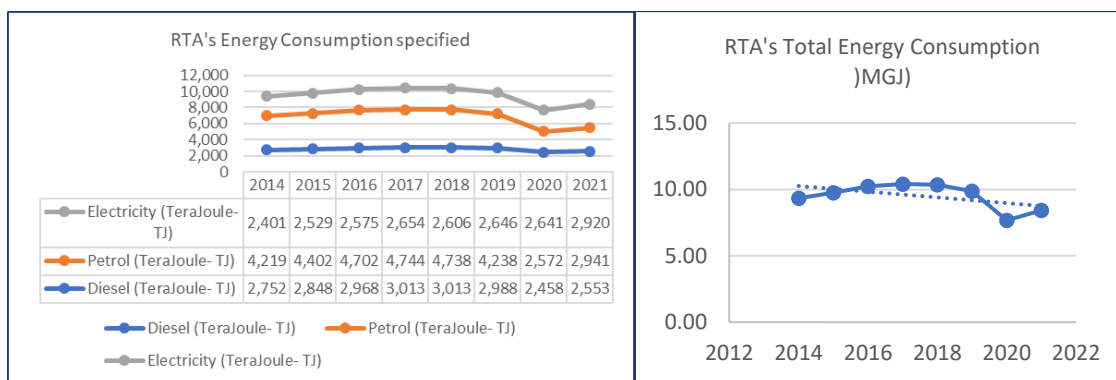
### Experience, Accomplishments, and Business Impacts

RTA established an Energy Management System (EnMS) in compliance with ISO 50001 to implement a systematic and continual improvement approach in managing the energy profile and performance. In 2013, RTA achieved ISO 50001:2011 certification and later in 2020 obtained the latest ISO 50001:2018 certification, to update its credentials of global best practices and standards, in managing the energy and preserving the environment by promoting environmental sustainability in transportation.

RTA adopted a systematic approach to induce continuous improvement in solutions to improve energy performance; including energy efficiency, alternative energy, energy-efficient purchases and sustainable, innovative and diversified energy-efficient solutions to meet the demand, to cut energy costs, and to curb the carbon emissions. This approach enabled the organization to make use of the most advanced energy technologies to reduce energy use and consumption, while boosting overall energy efficiency including reduced energy costs and reduced carbon emissions.

### Energy Performance Improvement

RTA focuses on electricity, petrol and diesel as their main energy consumption, making it a priority to always improve. Also, water consumption is monitored in the organization to further help in energy conservation. The organization since 2014, after implementing EnMS, is aiming to reduce its energy consumption through several energy saving projects and initiatives. ISO 50001 ensures continues monitoring and measurement to study and analyze a constant and improved implementation on energy consumption. Electricity consumption in 2021 is 2,920 TJ, while diesel and gasoline consumption are 2.553 TJ and 2,941 TJ respectively; Giving a total energy consumption of 8.421 Million GJ in 2021 which makes it 10% less from the year 2014, and this is mainly due to the initiatives to reduce the petrol and diesel consumption in the Taxi and the public buses fleets.



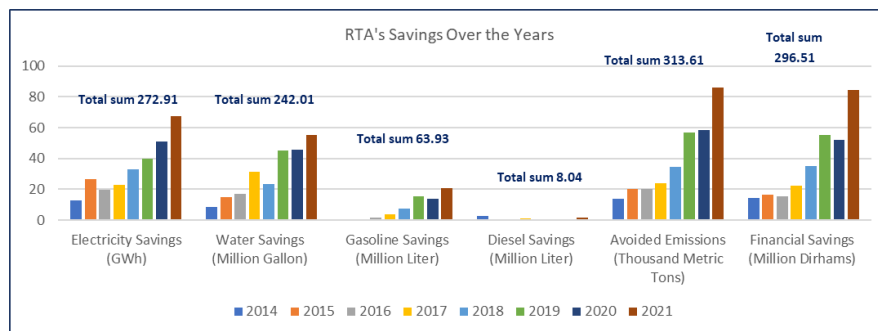
The projects and initiatives that implemented in the organization varies in cost for energy saving. KPIs and EnPIs are established to achieve energy management targets and reduce carbon emissions. Some of the key projects include: The Dubai Metro, Dubai Tram, Hybrid, Electric & Hydrogen Taxi, Electric-powered marine transport, The Electric Bus, replacing conventional streetlights and Traffic Lights with LED lights, RTA Smart Applications and Paperless services, Adopting Clean Renewable Energy Sources, and encouraging and engaging with Stakeholders and the Public.

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Since the energy saving measures implemented, RTA has achieved a total cost saving of 296.51 Million Dirham over the period from 2013 to 2021. Which corresponds in terms of energy savings to electricity savings of 272.91 GWh, gasoline savings of 63.930 Million Liter, diesel savings of 8.040 Million Liter, also water savings of 242.01 Million Gallon. Further, the CO2 reduction is monitored quarterly in terms of its CO2 equivalent, making it a method for RTA to monitor its carbon emissions in order to support the organization’s actions towards local and national obligations and global sustainable development goals. The accumulative CO2 reduction throughout the period from 2013 to 2021 is 313,610 tCO2e. For example, in 2021 electricity savings increased by nearly 33% with major savings attributed from energy efficient LED street lighting initiatives and initiatives in Dubai metro and tram stations.



## Other benefits

After the implementation and with the help of EnMS, RTA has gained many benefits, it is supporting the local and national programs in energy conservation by reporting and demonstrating energy management practices or greenhouse gas emissions to Dubai Supreme Council of Energy. In addition, the implementation of EnMS has increased the awareness of energy culture within the organization, leading to greater synergies and better communication between sectors and agencies which enables more development of projects and initiatives and much broader organizational impact. Also, the EnMS has contributed to improving the business for local companies through public private partnership projects such as the Solar PV projects.

## Costs of implementing EnMS

The development and implementation of Energy Management System in RTA is done with internal Resources. However, considering the cost of time for internal staff training, awareness and development and implementation of the EnMS (USD 980,926.43), the cost for preparing for the external audit (USD 85,831.06), and the cost of the third party audit (USD 40,599.46), then, the total cost will be (USD 1,107,356.95).

## Plan

### Management

As the RTA being the leading public transportation in the emirate of Dubai, it is essential for the organization to adopt the best international practices in energy efficiency which would reflect best on the organization and stakeholders. Since Sustainability Framework and Green Economy Framework, within which lies EnMS, were established in RTA, the top management has committed to achieving sustainability goals by signing a sustainability charter to oversee the day-to-day implementation of the sustainability and green economy measures by the concerned Departments that are defined in the organization structure. The central focal unit is supported by two committees:

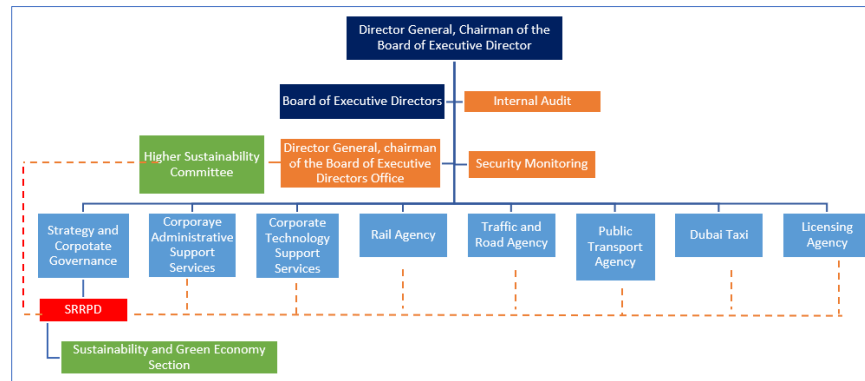
- Higher Sustainability Committee (chaired by CEO level) – facilitates governance control and support for the Sustainability and green economy function and reports to the Director General.
- Sustainability Criteria Committee (chaired by Director level) – facilitates operational control and support between the sustainability function and other concerned Departments to manage the day to day activities.

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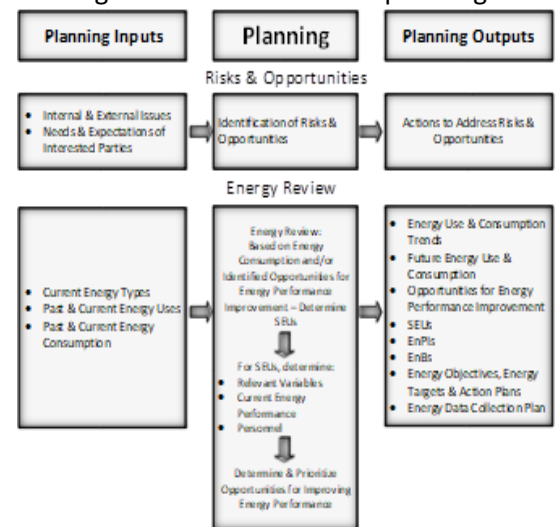
The departments which provide the most substantial contribution towards the sustainability and Green economy are the main operational focus area of RTA for all sustainability-related activities.



## Energy Planning

RTA is committed for the continuous improvement of Energy Management. This will be achieved through defining the scope of activities affecting energy performance in RTA, review the current energy performance in compliance to the legal and other requirements, establishing the energy baselines (EnBs) based on the review results and setting up the Energy Performance Indicators (EnPIs). The basic concept of Energy Planning in RTA is based on the planning as per the ISO 50001 and as illustrated in the diagram.

Agencies and Sectors in the organization identify key sources of energy used (significant and non-significant) for respective operational activities; Also, collect energy data on a quarterly basis, some of the data collected include Electricity, Petrol, Diesel and Water cost and consumption. The identified energy sources within Agency and Sector operations is considered for determining Significant Energy sources. Each Agency and Sector analyse the past and present energy use based on the available data or calculated data which is evaluated on a sample basis. Energy sources which are consuming more than 10% of the total energy consumption of Agency or Sector is identified as significant. Moreover, any major deviation or changes to the energy consumption or use is also considered as significant

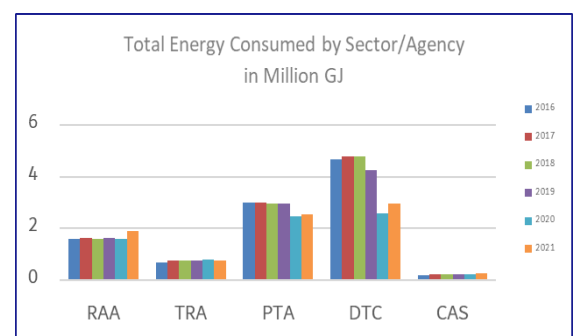


## Action Plan

Based on the energy performance and identified opportunities, RTA establish objectives, targets and timelines for achieving improved energy performance. Action plans are developed for meeting these objectives and targets and include a statement of the method of verifying the results and reporting back to management. It is also monitored on a monthly basis at respective Agency / Sector Level, and quarterly at Corporate Level and annually at Strategic Level.

*“RTA’s vision and energy performance are being met with the implementation of ISO 50001.”*

—Nada Jasim, Director Safety & Risk Regulation and Planning, RTA



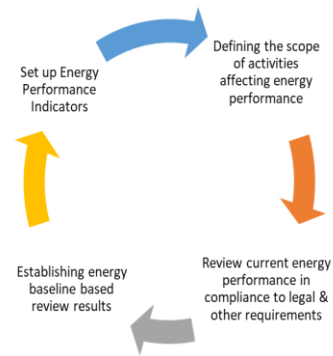
## Do, Check, and Act

### Do

First activities were related to approval of EnMS development by H.E. Director General, assigning of corporate policies and planning section, appointing teams, and training and awareness sessions for collection and analysis of data to determine energy use and consumption. In line with ISO 50001, RTA also has an Energy Management Policy. Through the energy management policy at RTA, it addresses the requirement of the Energy Management which involves identification of significant energy consumption areas based on the activities that directly affect significant energy performance.

Policy addresses identifying, prioritizing, recording and reviewing opportunities for improving energy performance, which shall give an input to establish EnBs for RTA. The organization determines external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcomes of its EnMS and improve its energy performance.

The members and departments responsible to achieve the requirement of energy management consists of the following:



- Top management/ CEO – ensures energy scope, boundaries and coordinator are defined for each agency and sector and provide required resources to meet requirements of EnMS.
- Management Appointee – ensure that the EnMS achieves its intended outcome.
- Safety, Risk, Regulation and Planning Department – conduct quarter and annual assessments and verify compliance through internal audits
- Agency and Sector RSMES Team – report on the performance of the EnMS and improvement of energy performance to top management at determined intervals.
- Quality, Health, Safety, Sustainability and Environment Offices - Monitor the overall performance of HSE on a regular basis, based on the results of the implementation of plans, inspection and analysis of the relevant data, and report the data.
- Employees - comply with energy management policy and take reasonable care for the environment and energy usage and consumption of RTA.

### Check

Tools and Resources used to determine energy consumption and performance improvement include:

- Site inspections, Audits, Document review and Information gathering by the Team to identify improvement areas.
- SWOT Analysis and Diagramming Techniques are used to study adoption of ISO 50001 Standard Requirements, aligning to existing Processes.
- Develop and implement Pilot Model and measure outcomes to confirm feasibility and optimization model to rollout implementation across RTA.
- Brainstorming workshops and Stakeholder engagement to identify performance and improvement areas (Dubai Supreme Council of Energy, Etihad Energy Services Company, Certification Assessment Body, etc.).

RTA monitors its energy performance through a set of well-defined EnPIs with a total of thirteen indicator prioritized according to the diversity of RTA’s operations and the energy use and are reviewed annually. Each

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indicator is measured and reported to higher management on quarterly basis with assigned ownership and a clear formula for calculation, some of which are shown below;

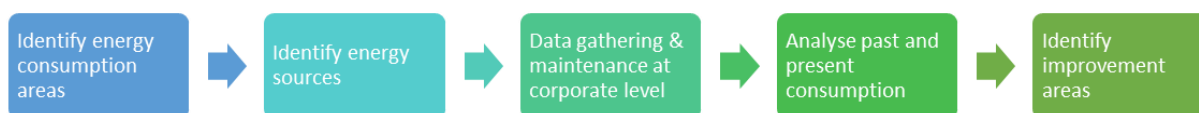
Operation	Fuel in public buses	Energy consumed in buildings	Emissions from Railway systems
Formula	$= \frac{\text{Litre}}{\text{km}}$	$= \frac{\text{KWh}}{\text{m}^2}$	$= \frac{\text{kgCO}_2\text{e}}{\text{passenger.km}}$

## ACT

Approach used to validate results include issuing RTA Energy Analysis Report on annual basis, and Green Economy Implementation Report on energy saving KPIs EnBIs on quarterly basis; with verification of results at agency and sector is conducted as follows:

- Comparison of bills against consumption figures based on the actual meter readings.
- Individual review sessions at different levels.
- Measurement Equipment, and validation through Software Applications, where possible.
- Evaluation of Actual energy use and consumption against the expected and investigate major deviations.
- Effectiveness of action plans developed in achieving the objectives, and Corrective Actions.
- Periodic Data analysis and comparison / trend analysis.
- Planned Internal Audits / Inspections & Management Reviews.
- Steps taken to maintain operational control.

In addition, Development and use of professional expertise, training, and communications to validate and verify results and also improve energy performance; Which consisted of Key Stakeholders engagement covered Ministry of Energy, Dubai Supreme Council of Energy, Dubai Electricity and Water Authority, etc. Approved RTA Energy Policy communicated to all Employees and stakeholder to ensure compliance. Also, specific Awareness & Brainstorming Sessions conducted for Top Management and Senior Management Team. Training Need Analysis across all Operational Units, resulted in added internal modular training, and delivered to wide range of technical and professional employees; (Bus Drivers, Taxi Drivers, Contractors, Maintenance Team, etc.). Energy Awareness messages, policies & other information are regularly communicated to employees as well as public.



## Transparency

RTA is aware of the importance of communicating the achievements in a clear and transparent way to the stakeholders. Hence, RTA state its energy performance improvement in its annual Sustainability Report which is published on the RTA website. In addition, RTA always pursue towards providing clear and reliable data in all of the reports it publishes internally and externally, thus emissions calculations related to energy is verified by a third-party ISO 140064 on quantification and reporting of greenhouse gas emissions and removals. Also, for assurance results are verified by an independent third party and the assurance statement is communicated in the RTA’s sustainability report. Furthermore, RTA shares its data with the Dubai Supreme Council of Energy for calculation of energy analysis for the emirate of Dubai.

## What We Can Do Differently

If RTA would do it all over again, it would:

- Use a smart software to collect data directly from the source with live dashboard to present the energy status.



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- Do more training and awareness sessions for the EnMS for all members related to collecting, reporting, calculating and reviewing data.
- Implement further relevant improvement opportunities for renewable energy sources.

However, the implementation of the ISO 50001 was the spark for RTA to realize the various benefits of the implementation of the Energy Management system, therefore, RTA leaders have gone beyond that to develop and announce in the year 2020 the **RTA’s Roadmap towards zero emission public transport and related infrastructure by 2050**; which aims to reduce the greenhouse gas emissions by 8 million tons of CO2e and save about 3 billion dirhams, by itself it will implement further sustainable practices to support the City of Dubai, the UAE and the International goals to limit global warming to well below 2 compared to pre-industrial levels. The table below illustrates the details of the RTA’s roadmap to achieving zero emission public transport and related infrastructure by the year 2050.

#	Pillar	Initiatives in the roadmap	Targets of the roadmap						
			2020	2025	2030	2035	2040	2045	2050
1	Green Mobility	Convert fuel operated public buses to Electric & Hydrogen Public Buses	0%	0%	10%	20%	40%	80%	%100
2		Convert the fuel operated Taxis to Electric & Hydrogen Taxis and Limousine	3.5%	10%	20%	40%	60%	80%	%100
4		Convert fuel operated school buses to Electric & Hydrogen school Buses	0%	0%	10%	30%	50%	80%	%100
5	Infrastructure	Installation of Renewable Energy (Solar PV) in all existing buildings and facilities – 24 Buildings		%100	Expanding the scope of application to the new RTA’s buildings, facilities and infrastructure				
6		Retrofitting all existing buildings	9%	35%	74%	83%	91%	100%	
7		All new buildings to be Near Zero Energy (NZE) Buildings	0%	%100	Continue implementation to all new projects				
8		Replace existing conventional lights with Energy efficient street lighting.	17%	35%	70%	%100	Continue implementation on all new projects		
9	Circular Economy	Increase Recycling of Municipal waste	65%	75%	%100	Continuous implementation			
10		Increase Recycling and reuse of water	12%	15%	20%	26%	30%	36%	40%



The Energy Management Leadership Awards is an international competition that recognizes leading organizations for sharing high-quality, replicable descriptions of their ISO 50001 implementation and certification experiences. The Clean Energy Ministerial (CEM) began offering these Awards in 2016. For more information, please visit [www.cleanenergyministerial.org/EMAWards](http://www.cleanenergyministerial.org/EMAWards).