



The Kingdom of Bahrain

National Energy Efficiency Action Plan

Executive Summary

January 2017

INTRODUCTION AND CONTEXT

The Kingdom of Bahrain has witnessed significant growth over the past four decades. It has grown its GDP by 5% per year over the past two decades, driven by a growing and educated population, the growth in financial services, as well as substantial investment in infrastructure. The energy sector in turn has expanded to meet this rising energy demand from a growing economy.

Bahrain ranks in the top ten countries with the highest electricity consumption per capita in the world. Over the past twenty years total primary energy supply grew by 4.2%, total final energy consumption grew by 5.3% and non-industrial electricity consumption by 6.6% per year. This growth has placed ever increasing strains on Bahrain's future energy reserves. Current projections on the availability of gas reserves suggest that Bahrain will no longer be able to meet its domestic consumption and will have to rely on imported gas as early as 2018. Ensuring the availability of oil and gas for future generations, and reducing the growth in Bahrain's CO₂ emissions, requires that these resources are consumed in as efficient a manner as possible.

Bahrain has taken a number of critical steps to shift the country towards more efficient consumption of energy. It has implemented energy subsidy reform and introduced important regulations such as minimum energy performance standards for air conditioners and lighting products. The National Energy Efficiency Action Plan (NEEAP) builds on already made achievements and proposes a comprehensive set of initiatives to further unlock energy efficiency potential in the country. The Plan identifies specific programs and new initiatives across various sectors and encompasses energy efficiency plans developed by individual institutions. The plan sets a national target for energy savings, identifies implementing mechanisms, provides estimates of energy and monetary savings and proposes budget for implementation.

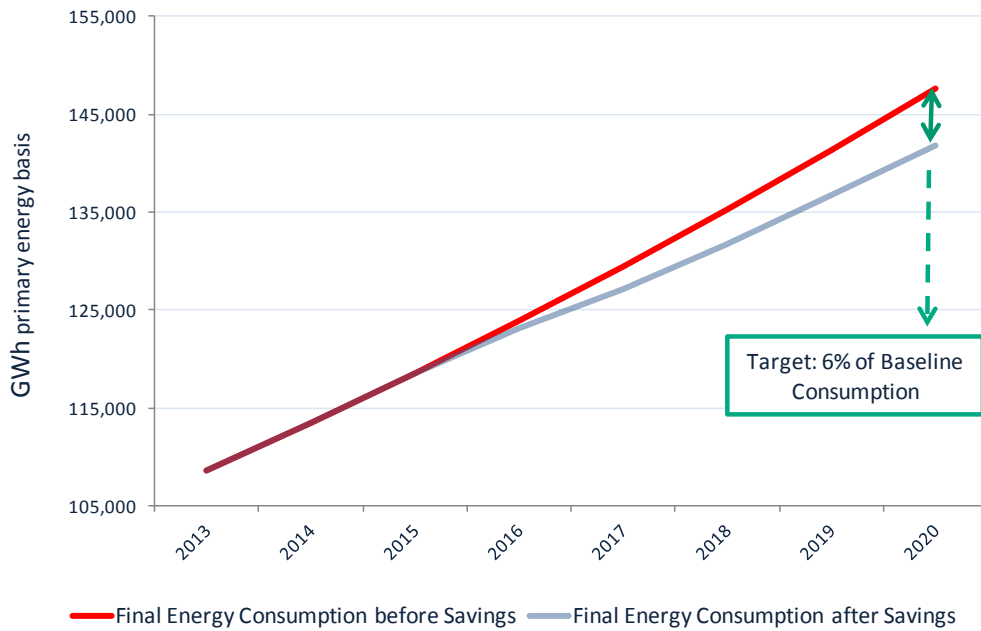
The Plan goes in line with the Economic Vision 2030 and the Government Action Plan 2015-2018, which call for conservation of natural resources through implementing energy efficiency programs. It also represents the Kingdom's efforts to implement its commitments under regional and international treaties such as COP 21 Paris Agreement on Climate Change, the United Nations Sustainable Development Goals and commitments under the League of Arab States Guidelines on Energy Efficiency.

NEEAP has been prepared by the Sustainable Energy Unit (SEU) through broad consultation with key stakeholder groups including the Electricity and Water Authority, the National Oil and Gas Authority, the Ministry of Housing, the Ministry of Works, Urban Planning and Municipalities, the Ministry of Industry and Commerce, the Bahrain Defense Force, large industry groups, academia, and others.

TARGET

A comprehensive process of consultation and engagement was undertaken to determine a feasible target for Bahrain. Based on a balance between technical and economic potential and taking into account institutional capacity to deliver energy savings a target of 6% has been adopted. The target is set as a reduction of energy consumption in the year 2025 expressed as a percentage of the average final energy consumption during the 2009-2013 period (baseline period).

The target equates to energy savings of 5,800 GWh on primary energy equivalent basis in the year 2025. Cumulative energy savings for the years 2016 – 2025 will exceed 25,000 GWh on primary energy equivalent basis. The formulation and estimation of targets were prepared in line with the methodology suggested by the Arab Guidelines on Energy Efficiency.



BENEFITS AND IMPACT

Pursuing energy efficiency can help the country optimize the use of indigenous gas resources, reduce greenhouse gas emissions, make the economy more competitive and improve energy security in the long-term. Achieving the stated 6% national target will result in:

- Energy savings of 5,800 GWh in year 2025.
- Cumulative energy savings of more than 25,000 GWh (PEE) in the years 2016-2025
- Cumulative government monetary savings of 89 million BD.
- Avoided investments in electricity generation of 172 million BD.
- Anticipated financial impact of 230 million BD after deducting implementation cost.
- Reducing greenhouse gas emissions by 3.4 million tonnes of CO₂.

THE PROPOSED INITIATIVES

To achieve the stated target and realize energy and monetary savings, a total of 22 initiatives are proposed within the plan. The initiatives cover all sectors of the economy and target efficiency improvements in both the energy demand and supply sides. Achieving the target will involve concerted action on the part of multiple ministries. The following entities will be directly engaged in the implementation of the initiatives:

- Electricity and Water Authority
- Ministry of Works, Municipalities and Urban Planning
- Ministry of Industry and Commerce
- Ministry of Housing
- Ministry of Transportation and Telecommunication
- Directorate of Traffic Services
- Large industrial companies such as ALBA, BAPCO, Tatweer, GPIC, Foulath Holding.

| Sector | Savings in GWh primary energy basis | |
|---------------------------|--|---------------------------|
| | 2025 | Cumulative 2016 - 2025 |
| Buildings | 7,265 | 21,336 |
| Industry | 1,866 | 4,664 |
| Government | 730 | 2,280 |
| Transport | 600 | 1,525 |
| Electricity Supply | 2,314 | 7,613 |
| Cross Sectoral | 1,098 | 3,125 |
| Total Projected Savings | 13,872 | 40,545 |
| 6% National Target | 5,792 | 16,928 |

Each sector contains a range of initiatives to drive savings within that sector:

| | | | | |
|--------------------|--|---|---|---|
| BUILDINGS | Building Energy Efficiency Code | Min Energy Performance Standards & Labeling: Lighting | Min Energy Performance Standards & Labeling: AC | Min Energy Performance Standards & Labeling: Appliances |
| | Building Energy Labeling | Training for Market Actors | Green Building Initiative | District Cooling |
| INDUSTRY | Industry Program | | | |
| GOVERNMENT | Government Building Lighting Replacement | Street Lighting | Government Building Energy Management | Green Procurement |
| TRANSPORT | Vehicle Efficiency Standards & Labeling | Transport Subsidy Reform | | |
| ELECTRICITY SUPPLY | Electricity Production Efficiency | Transmission & Distribution Efficiency | Power Factor Correction | Smart Metering |
| CROSS SECTORAL | Electricity Subsidy Reform | Awareness & Information Dissemination | Institutional Infrastructure | |

GOVERNANCE

I. SUSTAINABLE ENERGY UNIT

SEU, being the designated agency for promoting sustainable energy policies and practices in the Kingdom of Bahrain, will lead the coordination efforts in implementing the NEEAP and will provide technical assistance in the design and implementation of specific initiatives.

Responsibilities:

- Coordinate implementation activities among all stakeholders through developing partnerships and organizing regular coordination meetings.
- Inform stakeholders on the progress of implementation of the NEEAP.
- Draft energy efficiency policies and regulations and standard operating procedures for their implementation.
- Conduct monitoring and evaluation of initiatives and calculate energy and monetary savings.
- Provide technical assistance in developing tendering documents, drafting requests for proposals, and assessing outcomes of pilot projects.
- Carry out information dissemination and awareness raising campaigns through launching a dedicated website, organizing press conferences, promoting energy efficiency at various public events.
- Organize and support capacity building and training activities for government and non-government stakeholders.

II. NEEAP IMPLEMENTATION MONITORING COMMITTEE

The Committee will be composed of high-level representatives of key government and non-government institutions who would play the role of change agents to provide guidance, support and oversight of the implementation process of NEEAP. The Committee will be chaired by the Minister of Electricity and Water and may include representatives from the Electricity and Water Authority, the Ministry of Finance, the Office of the First Deputy Prime Minister, the Ministry of Industry and Commerce, the Ministry of Housing, the Ministry of Works, Urban Planning and Municipalities, the Ministry of Oil, and the Supreme Council for Environment. The Committee will meet on a quarterly basis.

Responsibilities:

- Oversee implementation of the NEEAP and facilitate its execution;
- Identify action items to overcome implementation issues and challenges;
- Put recommendations and suggest actions to relevant ministries;
- Decide on making changes in the NEEAP if required;
- Discuss the progress in the implementation process.

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