

ENERGY EFFICIENCY FOR CLEAN DEVELOPMENT PROGRAM (EECDP)

USAID ENERGY EFFICIENCY OPPORTUNITY STUDY – KAZAKHSTAN

THE CHALLENGE

Energy efficiency is an essential cornerstone of a successful clean energy strategy, acting as a clean “fuel” to meet significant portions of consumer electricity demand. Efficiency also supports increased electricity access, job creation, affordability of renewable energy, and economic growth. Accelerating deployment of energy efficiency requires selecting strategic market interventions that deliver large impacts. This document highlights the opportunities for scaling up energy efficiency in Kazakhstan and for building an enabling environment to deliver energy efficiency savings.

Kazakhstan has achieved initial success in developing energy efficiency regulations and plans that can be built upon through implementation of an energy efficient lighting program for the commercial (public) sector, as well as through programs for residential and commercial district heating energy management systems. However, two persistent and overarching barriers have emerged: (1) a disincentive to invest in energy efficiency programs due to low energy tariffs, split incentives, and aggregated metering, and (2) limited availability of capital for energy efficiency projects, particularly with the recent devaluation of the tenge.

THE BUILDING BLOCKS

The graph below shows how the enabling environment in Kazakhstan measures up against six common building blocks for energy efficiency. These building blocks represent market characteristics and infrastructure that provide a foundation to scale up energy efficiency, and inform the likelihood of success for different interventions. Due to the variability among countries, understanding the unique strengths and barriers of specific markets is key to identifying successful energy efficiency program opportunities. Policy and program activities to strengthen smart incentives, technology development, public awareness, and financing support will lead to greater efficiency opportunities and sustainability.

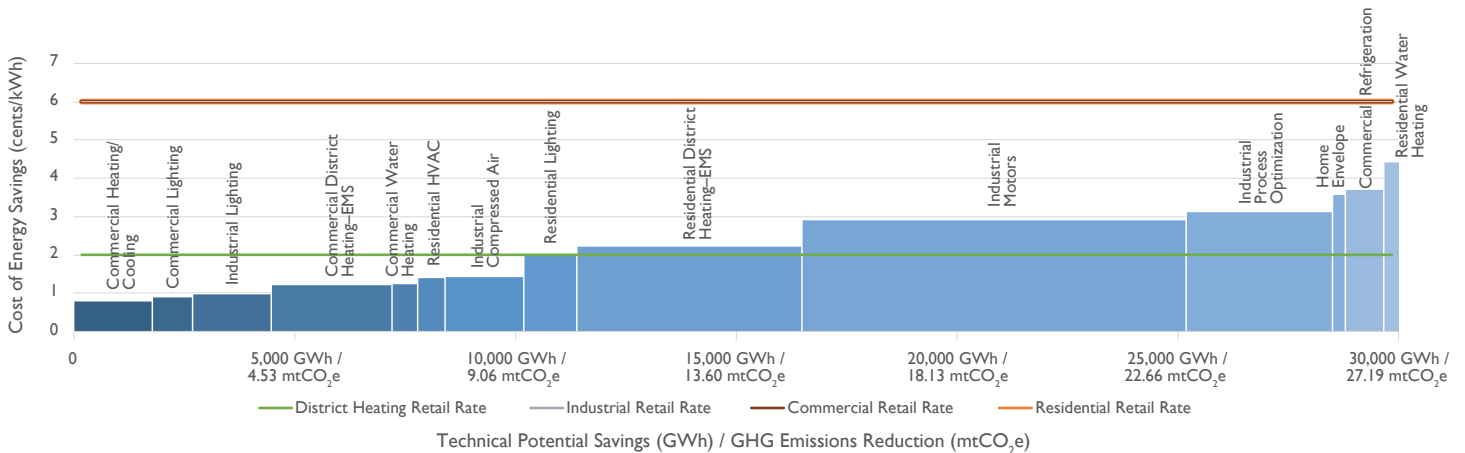
Energy Efficiency Building Block Achievement



THE OPPORTUNITIES

Energy efficiency opportunities are typically compared by **cost-effectiveness** (i.e., the cost of saving a unit of energy). The cost-effectiveness of the opportunities assessed in this study is shown below in Figure 1. Programs with the lowest bars save energy at the least cost. This study also assessed the **energy savings potential** of each opportunity, as shown by the width of the bars. Programs with the widest bars have the greatest impact potential on the market.

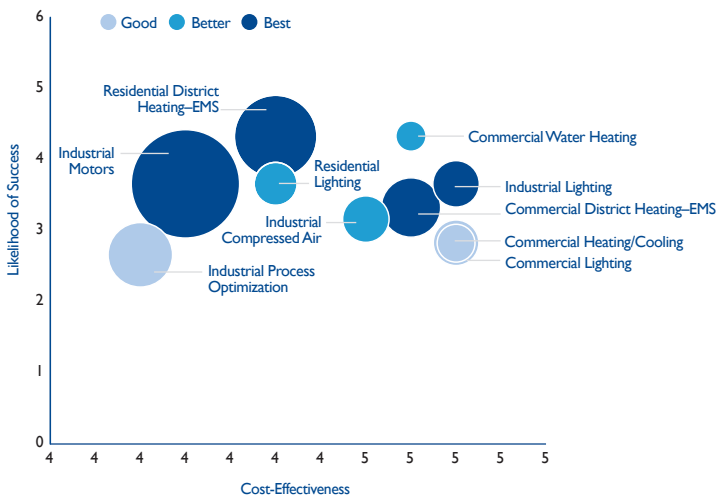
Figure 1: Top Energy Efficiency Programs Ranked by Cost-Effectiveness



To support stakeholders in prioritizing energy efficiency program development and implementation, this study additionally assessed the **likelihood of success** for each opportunity. Evaluating opportunities against all three factors—cost-effectiveness, energy savings potential, and likelihood of success—enable more informed decision-making. Early program success builds positive public and political opinion around energy efficiency and improves the market environment for programs that may be more difficult to implement but offer significant savings potential.

Figure 2, below, shows recommendations for *Good*, *Better*, and *Best* opportunities to consider for early implementation in Kazakhstan. *Residential District Heating Energy Management System (EMS)*, *Industrial Motors*, *Industrial Lighting*, and *Commercial District Heating EMS* are recommended as the best programs in the near term, although other factors can be considered to reprioritize opportunities, since all offer cost-effective savings. Across the top 10 opportunities, the **combined 28,881 GWh of potential savings in 2016 represent 30% of total electricity consumption in Kazakhstan in 2014**. This is equal to approximately 25 million tons of greenhouse gas (GHG) emissions reduction.

Figure 2: Top 10 Energy Efficiency Opportunities



Guidance for Reading Figure 2

Likelihood of Success: Based on an assessment of six indicators (market transformation potential, political feasibility, program complexity, environmental aspects, economic aspects, and equity). The higher the score, the higher the likelihood of success of the individual energy efficiency opportunity.

Cost-Effectiveness: Calculated using location-specific data on product costs and energy savings potential. The higher the score, the higher the cost-effectiveness of the individual opportunity.

Size of Opportunity: The size of each circle indicates the energy savings potential of the individual energy efficiency opportunity.