Facilitating Energy Efficiency to Reduce Energy Costs, Enhance Energy Security, and Minimize Environmental Impact

Summary of Recommendations on Energy Efficiency for the National Energy Policy (Created by LBNL, AEEE and FICCI with inputs from stakeholders)

Submitted to NITI Aayog
November 19th, 2015

Background

Energy efficiency (EE) can contribute significantly to meeting the increasing demand for energy services in a sustainable, affordable, and secure manner; however, it faces significant market and non-market barriers leading to inadequate importance in energy policy making and resource allocation. The current EE policy framework, which is primarily defined by the Energy Conservation Act of 2001, has provided a robust initial framework for facilitating energy conservation and adoption of efficient technologies and practices. While significant progress has been made so far on improving energy efficiency in certain sectors, large additional potential still exists. For example, additional cost effective efficiency improvements in electricity intensive appliances and equipment, commercial and residential buildings, and industrial equipment and processes could save more than 500 TWh/year by 2030, which is equivalent to the power produced by 250 GW of solar and wind plants.[1] This document summarizes the policy recommendations for enhancing the current policy and implementation framework to realize the enormous potential for EE. The recommendations are based on the inputs from key stakeholders and experts during a workshop organized by FICCI and AEEE in October 2015; they should serve as an initial draft for further inputs from a wider set of stakeholders and experts.

The key recommendations are summarized as follows: (1) Set sector-specific goals that are commensurate with the cost-effective saving potential, (2) Initiate a few national programs with the highest impact and develop a framework to track their progress, (3) In order to achieve these goals and implement programs, add more specificity, flexibility and predictability to the use of policy instruments, (4) For creating a robust implementation framework, simplify the institutional structure, substantially increase the budgetary allocations for EE, build institutional capacity at the center, states, and ULBs, and create a transparent public process of policy and regulation making, and (5) Create complementary policy framework in other sectors for accelerating the implementation. More analysis is needed for prioritizing the programs and policies recommended in this document.

1. Set sector-specific goals commensurate with the cost-effective potential

The EE policy framework should set sector specific goals and enable the formulation of such goals commensurate with the cost-effective energy saving potential. Economy wide goals (such as reduction in carbon or energy intensity) can act as useful motivators; however, they do not have adequate specificity to spur focused actions on policies, programs, and implementation. Sector specific goals should be revised every certain number of years based on the state of technology, costs, and evaluation of the achievements of current goals. In addition, equity and environmental benefits should also be considered while setting the goals. The national policy framework should provide guidance on the goal-setting criteria. Example of such a criterion is making the globally most efficient technology today a norm in India in the next five to ten years. This approach is similar to the Domestic Efficient Lighting Program (DELP) program, which aims for lighting market transformation to LEDs in the next few years. Also, the goal

[1] Source: Abhyankar et al (2015): *"Assessing the energy efficiency potential in energy intensive appliances in India"*, LBNL (forthcoming).

criteria should include key co-benefits of the energy efficiency policies. For example, in case of the transport sector, the goal could be reducing oil imports by 10%, or reducing the particulate matter pollution due to vehicles by 20% over the next five years by enhancing the vehicle efficiency and shifting to more efficient modes of transportation such as rail. The following table summarizes some examples of sector-specific goals and the underlying criteria.

	Appliance and Equipment	Industry	Transport	Buildings
Example Goal criteria	Today's most efficient technology to be a norm in five to seven years Capture all cost effective potential	Today's most efficient industry globally to be the norm in ten years for most energy intensive industries.	Reduce oil import and local air pollution significantly. Move as much locomotion to more efficient modes such as rail.	Current best practice for building design, construction, & operation becomes the norm for new construction in the next five years.
Example Goals	100 GW, 250 TWh by 2022 All lights to be LED by 2018. All ACs, fans, pumps, water heaters etc. bought in 2022 should be twice as efficient as today	Reduce the industrial energy intensity by 20% by 2022. (Can create sub-sector specific goals.) All Designated Consumers to adopt ISO 50001.	Reduce oil import by 10%, 20%, and 50% by 2022, 2032, and 2047 respectively	Reduce overall buildings energy consumption by 15% by 2022 & 25% by 2032; ECBC compliance must be 90% by 2022; Energy efficient guidelines/codes made mandatory for high-rise residential buildings in a year

2. *Initiate national programs with highest impact and develop framework to track progress*

Given such goals, policy should initiate a select set of national programs with the highest impact and allocate substantial budgetary support for their implementation. For example, (a) DELP type program for AC, pump, and fans to save 40GW by 2022, (b) Revision of AC standards to save 20GW by 2022, (c) National buildings program to save 25GW from residential and commercial buildings by 2022, (d) Expansion of the PAT program to reduce the industrial energy consumption by 10% in the 2nd phase, and (d) Standards for HDVs and revision of LDV standards to save 10% of oil consumption by 2022 etc.

The national policy should also provide guidance on creating a framework to track the progress of these national programs as well as the goals. For this, the long run goals should be split into a series of short term (3-18 months), medium term (18-36 months) and long term targets (36 months and beyond). Every six months, there should be a progress report and a review of each of the targets to be available in the public domain. EESL, for example, has created an online tracking portal for its DELP and SLNP programs.

3. *Add more specificity, flexibility, predictability to the use of policy instruments*

The Energy Conservation Act and related policy documents do not provide guidance on the criteria to be used for the stringency and frequency of revision of any EE program. As a result, in certain instances, it does not provide a clear and predictable direction to the industry to plan their future supply chains and manufacturing. Further, in some instances especially in the appliances sector (e.g. air conditioners), the energy consumption norms used in the labeling program need to be established so as to capture the most cost-effective energy saving opportunities. In order to achieve the aggressive sector-specific EE goals, the national policy should provide specific guidance on the key policy instruments such as standards and labeling, building codes, trading, bulk procurement, national awards, and incentives etc. This policy guidance should primarily cover the stringency of the EE norms as well frequency of revision of such norms. Examples of the additional policy guidance include:

a) **Standards and labeling**: All key appliances, equipment, and vehicles should be covered by mandatory standards and labeling programs by 2020. BEE should set the Minimum Energy Performance Standard (MEPS or 1-star label in case of appliances and fuel economy in case of vehicles) in such a way to capture all the cost-effective EE potential. The standard / label levels should be revised regularly (at most every three years) in line with the global market trends; the revisions should be such that today's most efficient

technology becomes the minimum standard after two to three revisions. Corporate average standards (similar to the Corporate Average Fuel Economy standard in the US) can encourage the companies to push more efficient products in the market aggressively and also provide significant flexibility; companies may trade savings with each other in order to maintain their fleet level MEPS.

b) **Bulk procurement and incentives:** Over the next five years, DELP type program should be implemented for five most electricity intensive appliances and equipment with a target of super-efficient technology to be 50% of all new purchases. Given the benefits of EE programs to cut utilities' power purchase expenses, appliance incentive programs may be financed using utility revenue. There should be a clear directive for bulk procurement of efficient products in the public sector (such as appliances used in the public buildings or government vehicles and buses etc.) with a transparent monitoring process.

c) **Industrial energy efficiency**: Clear targets are needed for deepening and widening of the PAT program; PAT should cover 80% of all industrial consumption by 2020. Target reduction levels should capture all cost effective energy saving potential. A robust technical framework supported by an energy management and reporting system is essential for developing industry and process benchmarks. Moreover, a trading and pricing framework for Energy Saving Certificates being awarded under the PAT program should be developed within the next one year. For revision of the PAT targets, comprehensive M&V is essential; adaptation of standardized protocol should be completed within the next 2 years.

d) **Building codes**: Simplify and strengthen code compliance responsibilities across central, state and ULB departments, and provide incentive through central sector fund allocation for improved code compliance. In addition to the design related mandates, actual measured performance should also be considered for rating buildings or as part of the building code. Going forward, residential buildings energy code/guidelines should be developed in the next three years; given the implementation challenges, one can begin with multi-family high rises in certain high density urban areas (e.g. NCR, Mumbai, Bangalore, Hyderabad etc.). Standardized M&V protocols/guidelines need to be adapted from the globally available and widely used M&V protocols that are crucial to assess the energy savings.

e) **Awards for facility and enterprise energy efficiency:** National awards (substantial cash awards or tax-breaks etc.) to recognize: (a) the most energy efficient enterprise in major industrial and building sectors (power generation, cement, steel, aluminum, hotels, hospitals, office, and residential), and (b) companies that have sold significant energy efficient products relative to their total sales (above a certain threshold to ensure minimum scale). For example, if the most efficient technology constitutes 10% of a company's annual sales (minimum gross revenue of Rs 5,000 Cr/year in India operations), it gets a tax-break.

f) **Demand response:** Grid interactive demand response by smart appliances, buildings/industrial consumers, or EV chargers can provide critical services to the grid especially for RE grid integration or during peak demand periods. Given the large potential, by 2022, India should have ~20GW of automated demand response capacity. Such programs can capture significant co-benefits of efficiency policies, standards, and technology upgradation.

g) **Energy efficiency for energy access**: Super-efficient DC appliances can lower the distributed energy access cost by nearly 50%. Power for All and other initiatives such as solar pumps should mandate using only the most efficient appliances; given the potential reduction in the supply side investments (e.g. solar panels), a part of the total subsidy for energy access should be diverted to purchasing super-efficient appliances. The standards and specifications of such super-efficient DC appliances should be determined on priority.

4. Create a robust implementation framework

The policy should provide specific guidance on creating a robust framework, which leverages the current institutional structure at the central and state level, for implementing the identified programs and instruments. The following list identifies the key elements of such framework.

a) **Institutional framework**: Additional guidance for identifying the right institutions and agencies, both at the central as well as at the state and ULB level is critical for effective implementation. For example, EESL

can potentially create a standard appliance incentive program for all utilities; BEE should set the PAT targets and potentially develop the capacity of the State Designated Agencies (SDAs) for M&V. Additionally, significant inter-agency coordination is needed especially in the buildings and the industrial sector; for example, for effective building code compliance, greater coordination is needed between BEE, CPWD, State PWD, SDAs, and ULBs.

b) **Resource allocation**: The financial resource allocations for the key EE agencies both at the central (such as BEE, EESL) as well as state (SDAs) level should be commensurate with the saving potential and should be increased significantly – both in terms of staff as well as program funds.

c) **Institutional capacity building**: Sustained capacity (administrative and technical) development and enhanced technical support to help start policy implementation is crucial; focused and target-oriented bi-lateral and multi-lateral technical assistance programs should be explored for this purpose. Additionally, technical institutes /centers of excellence focused on energy efficiency (similar to the National Institute for Wind Energy) should be created for providing the technical and analytical expertise for policy and regulation making. Such institutes /centers could be established in collaboration with the existing academic establishments such as CEPT, IITs, NITs, or IISc.

d) **Transparency, accountability, and public participation in standard formulation and regulation process:** Encourage "evidence based" policy making that will require additional data collection through monitoring, measurement and surveys, market assessments, and rigorous analyses. For example, decisions about the "cost-effective" levels for determining the stringency levels (such as MEPS) should be made only after significant technology, market, and cost-benefit assessments. Make the standard and regulations formulation fully transparent by making the data and analyses available in the public domain, and encourage civil society groups and academia to participate in the decision making process.

5. Complement the policy framework for accelerated implementation

The following list gives a few examples of complementary initiatives that can accelerate the implementation of the existing policies.

a) **EE financing**: A robust financing framework is the key to accelerated policy implementation. A focused financing initiative such as offering line of credit to EESL or other agencies, loan guarantees, grants, making EE as a priority lending sector, partial risk sharing of EE programs etc. is important. Additionally, education of the financial institutions for facilitating lending to cost-effective EE programs is needed.

b) **ESCO led programs**: Energy Services Companies (ESCO) are crucial in creating the EE value chain. However, for the ESCO business model to take off, enforcement of the existing codes is crucial; this is especially important since energy costs is a weak driver for EE actions by consumers. EESL or other agencies should provide partial loan guarantees to ESCOs for de-risking their performance based contracts.

c) **End of life policies**: Clear guidance is needed for end of life of major energy consuming equipment in industrial, power generation, automobiles, and buildings sector since very old and inefficient equipment can undo the efficiency gains of the aggressive energy efficiency policies. In cases such as ACs and refrigerators, this can be coupled with recovery of ozone depleting and/or high GWP refrigerants.

d) **Consumer behavior and awareness:** BEE or other agencies should make more analysis (e.g. life cycle cost analysis) available in the public domain in order to build consumer as well as lender confidence in EE technologies and material especially in the buildings and industrial sector. Private sector, appliance manufacturers, and civil society could play a role in encouraging energy efficient consumer behavior e.g. changing the "default" temperature setting on ACs, or temperature norms in centrally cooled buildings.

e) **Energy use disclosures:** Mandatory energy use disclosure programs, such as energy use reporting by commercial and large residential buildings at the time of real estate transactions and/or property filing could be helpful in making energy consumption as one of the decision variables in such transactions.