

RULES FOR RENEWABLES:
ALIGNING ROLES AND INCENTIVES FOR RENEWABLE ENERGY

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I. Introduction

The current economic downturn and growing interest in renewable energy have brought electric utilities to a crossroads. Electric utilities were once considered stable enterprises that served a governmental or quasi-governmental function in providing an essential, dependable infrastructure that the rest of the economy could rely upon. With energy being essential to economic development as well as maintaining standards of living, electricity prices are under increased scrutiny. Interests in energy security lead policymakers to seek to limit their jurisdiction's reliance on imported fuels and focus more on renewable energy alternatives, which are thought to be less polluting and less dependent on large infrastructure than traditional sources. Some politicians suggest that the renewable energy industry growth has the potential to create domestic jobs.

Can increased use of renewable energy improve the environment and energy security? Can it do so economically? The answers depend upon context, policies and regulation. In this paper we describe four rules for renewables that we believe improve the odds for good results.²

II. Changing Business Model

Traditionally, utilities were vertically integrated and self-contained, meaning that generation, transmission, distribution, and retailing were provided by a single entity. This structure was chosen in part because of a belief that there were economies of scale in producing power.

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² To this end, PURC is expanding the scope of the clean energy and energy efficiency resources available to market participants on the Body of Knowledge on Infrastructure Regulation (BoKIR), <http://www.regulationbodyofknowledge.org>. Funding for this expansion is from the World Bank and the Norwegian Trust Fund and will be available in late 2012.

The adoption of renewable energy as a meaningful source of electricity changes the traditional model. In some instances commercial businesses and residential customers install solar panels to supply a portion of their own power. These customers may find that they have more power than they need and want to sell their surplus onto the grid. Entrepreneurs sometimes produce electricity with renewable resources and seek to interconnect with the grid. Complicating the situation is a defining characteristic of renewable energy sources such as solar and wind power, namely that energy is supplied when the elements are right – the sun is shining or the wind is blowing – not necessarily when customers demand power. This has led to the development of cottage industries that “store” power until customers are ready to consume. In one country an entrepreneur used surplus power to pump water to a higher elevation, and then produced hydro power when customers were ready to consume.

These changing business models provide a new industry dynamic in that the customers are now becoming the competitors, energy supply happens opportunistically rather than when customers demand, and capacity development occurs because of complex economic signals rather than because of an obligation to serve. This feature dynamic necessitates changes in some traditional regulatory rules and heightens the importance of others.

III. Four Rules

This section examines four rules for renewables that we find to be central to pursuing common policy objectives in the context of increased use of renewable energy. They are based upon our work developing the Regulation Body of Knowledge and our experiences training regulatory professionals around the world.

Rule 1. Know the Rules

Clear, enforceable commitments on rules impacting cash flows have always been important but the business models for renewable energy make clarity and commitment critical. Entrepreneurs and traditional utilities take on significant financial risk when investing in renewables because markets are more competitive. Furthermore, technologies are less certain and technologies such as wind and solar

have relatively large fixed costs. For example, the Kenya feed-in tariff provides power purchase agreements for wind, biomass, small hydro, geothermal, biogas, and solar resource generated electricity for 20 years. An innovative feature of the Kenya tariff is how it addresses risk. Some renewable suppliers can choose to provide either firm or non-firm power. If they choose to supply firm power, the renewable supplier provides back up generation. The suppliers receive a lower payment for non-firm power because the system operator must compensate for intermittency. In this manner, both parties are aware of their responsibilities.

Because renewable energy changes regulatory and business rules, there will be a temptation for some to behave opportunistically and change rules on a retroactive basis. This should be avoided. If operators are penalized for past managerial decisions related to renewable energy even though those decisions were consistent with regulatory rules applicable at that time, the operators will likely underinvest in the renewable energy regime, which will diminish its effectiveness.

Rule 2. Know the Roles

Role confusion defeats policy goals. Authority runs vertically from citizens, through policymakers, to regulators, to operators. Policymakers act as representatives of citizens, identifying policy priorities such as the economics of prices, importance of service quality, and the significance of externalities. Policymakers communicate these priorities to head(s) of regulatory agencies, who the policymakers hire. This authorization is done differently in each jurisdiction and may take the form of statutes, policy statements, etc. The agency head(s) are then responsible for developing the agency and its staff, establishing regulatory rules and procedures, and making decisions on prices, service quality, and the like in an effort to achieve the policy priorities. It is the utility's responsibility to make efficient business decisions within the rules set by the regulator.

Although the boundaries between "policy-making" and "regulating" are inherently gray, the role of the regulator in renewable energy is defined by legislative and executive decisions. Priorities and frameworks are policy decisions that are customarily and perhaps, preferably, taken by policymakers and not regulators. For instance, decisions regarding source portfolios depend on policy priorities, such as

energy security, environmental impacts, how consumers will pay for renewable energy, and funding sources if subsidization is important. Policymakers may also identify targeted sectors and provide taxpayer support or choose to delegate source decisions and other instruments.

In reality, both policymakers and regulators make policy. The distinction is that policymakers define the goals and parameters for regulation and decide whether regulation is succeeding or failing. The more difficult questions for the government are in choosing the appropriate level of detail for policy and the methods for assessing regulatory performance. It may be more useful to think, not in terms of policy making versus regulation, but, rather, as macro policy versus micro policy, where the former focuses primarily on economic development, environmental priorities, and distributive impacts, and the latter consists of the specific rules that the industry is obligated to follow and that require technical expertise to develop.

Optimally, the Government sets basic (macro) policies. This should be done on a prospective basis so that investment decisions are efficient and align with the policy objectives. However a key reality is that there will be what is viewed as “policy vacuums.” For example, in some jurisdictions commercial interests in solar energy promote feed-in tariffs designed to advantage solar power over other sources. These interests view the absence of a policy advancing feed-in tariffs as a “policy vacuum” and make public statements to the effect that the Government has no policy when in reality the Government may simply be silent on details, leaving it to the regulator to determine whether tariffs make sense given the economic and environmental priorities that the Government has established.

Since regulators are creatures of the state rather than Government, accountability is crucial. There are three sources of this. One is the political accountability described above, where policymakers determine whether regulation is succeeding or failing based upon outcomes, and the policymaker responses to these determinations are restricted by law. A second source is appellate review, where courts or tribunals determine whether the regulatory agency is acting within its authority and maintaining its integrity. The third source of accountability is the public, where transparency, due process, and the like allow the public to observe how the process works and who is influencing the process.

What does this governance structure mean for the role of the regulator in renewable energy? Within the context of policy goals that establish priorities and that enable regulations for customers and entrepreneurs to supply renewable energy, regulatory instruments could include feed-in tariffs, net metering, renewable portfolio standards, auctions (tendering), and power purchase agreements. These instruments are not mutually exclusive. For example, in the case of Kenya, projects for feed-in tariffs were awarded via a competitive process that involved power purchase agreements.

Rule 3. Know the Ropes

The regulator serves several important roles in the space of renewable energy. These include:

Issuing licenses related to regulatory functions. In many jurisdictions, the electricity regulator has responsibility for issuing a “certificate of use” when a capital investment has been completed. These certificates generally state the standards under which the facility is to be operated, such as power quality. These operating standards are specified in advance of operation and enforcement requires ongoing monitoring. Performance standards have cost and tariff implications because meeting the standards generally raise costs that consumers or taxpayers end up paying. While market rules may specify the party responsible for maintaining particular aspects of overall system reliability, economic principles of cost causality suggest that the costs for this maintenance be assigned to the parties that cause it to be incurred.

Establishing the price level and tariff structure. Price levels determine overall cost to customers and the financial sustainability of commercial operations. If renewable energy is more costly than traditional sources, the higher cost affects the affordability electricity. In the context of renewable energy, tariff structure decisions include such things as time of use rates and feed-in tariffs. The design of these prices sends financial signals to operators, impacting their investment and operating decisions.

Establishing a Uniform System of Accounts. Often tariffs are based on operator costs. For example, feed-in tariffs may be based on the avoided capacity and operating costs of the traditional utility. Proper tariff setting cannot occur without good cost information. Needed information includes income statements, balance sheets, statements of cash flows, and operating statistics are all essential inputs in managerial decision-making and regulatory review. Accounting separations according to functions

facilitate benchmarking, so performance comparisons can be made across firms facing comparable production conditions.

Arbitrating disputes: Disputes may arise in a number of areas. Timely resolution is important because in decisions are not neutral in their impacts on stakeholders.

Reporting sector and commission performance: Accountability requires that the regulatory agency submits reports regarding sector and regulatory performance to policymakers and the public. Reporting requirements should be standardized and discussions scheduled on a regular basis.

Rule 4. Know the Reasons

Regulations should be aligned with purpose. Most countries aspire for energy services be affordable and provided at least cost, subject to other policy goals. This means that economic incentives should be aligned with efficiency.

There are three factors to consider. One factor is whether operators are encouraged to operate at least cost for the desired quality, etc. This is generally handled through regulatory incentives for utilities, including benchmarking and profit incentives that reward producers that deliver the right levels, mixes and qualities of outputs, given the limited resources available. Similarly regulators should operate in a cost-effective manner as well: adhering to schedules, establishing sound incentives systems, and providing clear rules and expectations regarding outcomes.

Another consideration is the distribution of rights and obligations. With some feed-in tariffs, for example, the utility has the obligation to balance load given the intermittent supply from the renewable energy provider. This arrangement could increase costs and risks for the utility, which will be covered by customers or taxpayers and not by the enterprise that caused these costs, namely the renewable provider. In contrast, the Kenyan feed-in tariff requires the renewable provider to make a firm commitment to provide power in order to receive the higher payment for electricity. This does not put the entire cost burden on the renewable decision maker, but it is a step in that direction.

The third consideration is pricing. Retail pricing affects customers' decisions to consume power. If retail prices for electricity are less than their marginal production costs and externalities, customers will be encouraged to consume more power than is justified given the costs to the economy. Likewise, prices for feed-in tariffs that exceed the utility's avoided costs, plus or minus any difference in externalities between the utility's power production and the renewable power, total production costs will be higher than is economically justified, which increases retail prices and decreases the efficiency of the economy.

Policies and regulations should be designed with the understanding that resources have value for other uses, and that this value is reflected in the prices that producers pay for their inputs and that customers pay for other goods and services. Studies should quantify and prices should reflect, to the extent possible, the costs and benefits of different energy sources.

IV. Conclusions

In this paper we describe four rules for policies and regulations for renewable energy. While these rules are not new to energy policy and regulation, they can take on greater importance because of the new industry dynamics set up by the diversity of players and means of supply created by the introduction of renewable energy.

Resources

Berg, Sanford and Theodore Kury. (2012) "New Role for Regulators in Addressing the Impact of Renewable Energy and Energy Efficiency Policy." PURC Working Paper, University of Florida.

United Nations Environment Programme. (undated) "Green Economy Success Stories: Feed-in Tariffs in Kenya."

<http://www.unep.org/greeneconomy/SuccessStories/FeedintariffsinKenya/tabid/29864/Default.aspx> (last visited September 4, 2012).