

Remarks by Karl Rábago
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John Prine once said, “We are living in the future – tell you how I know – read it in the paper – 15 years ago.”

Fifteen years ago, I had the honor of appearing before this conference to speak. We were in Minneapolis, and I was working at DOE. We were beginning to see a future in which clean energy would be the first choice, where structural solutions, like competition, technological innovation, and convergence would open up new opportunities and introduce new solutions to all manner of problems – environmental, economic and equitable. We had a glimpse of a new future, and saw retail competition, properly structured, as a means to an end – with properly incentivized new market entrants seeking novel solutions for serving all customers, including the hard-to-serve. We saw a technological revolution in clean energy that would finally and fundamentally break the back of the capital-intensive, too-cheap-to-meter fiction, and introduce true least cost energy services. We were funding LIHEAP and weatherization and public benefits of many kinds, and measuring urban air pollution impacts and speaking openly about environmental as well as economic justice.

In many ways, we were proven wrong – or maybe naïve. Public policy leaders didn’t have the stomach for true competition, erecting fictions in lieu of policy. Low energy prices and antiquated concepts of technology development pathways, as well as a fundamentally flawed federal policy slowed and reversed much progress that we had made.

But this is not a jeremiad. I haven’t been in the wilderness for 15 years. I am here today to argue that we are finally seeing some of the changes that youth caused me to expect much sooner. We are finally confronting realities that we knew underpinned what we merely called reality. We really are able to see with some clarity the potential of the “utility of the future” – today. And I want to call out the road signs you will see more of, along the way.

My goal is to stimulate your thought, to remind you that when you are working thru your latest rebate or weatherization application form, qualifying your latest program participant, or recruiting your newest new hire, you are part – a major part of what could be a transformative change in one of the most important service sectors in our society. And change is coming faster that you think.

So please stay with me to talk about 12 big trends – trends that point toward the utility of the future.

Prevention → Compliance

I want to start with a trend largely already complete – except perhaps in deep sea oil well drilling. (A short aside – why don't we simply require all deep-sea and potentially dangerous oil wells to be drilled in pairs, in parallel. That way, if one well fails, the second is close and capable of avoiding catastrophe. Why put all our eggs in one basket?)

The pollution prevention, quality, environmental justice, integrated resource planning, weatherization, LIHEAP, and other major initiatives in the energy industry over the last fifteen years really shared a common theme. It is demonstrably cheaper to avoid than repair, to forestall than compensate, to prevent than mitigate.

In no small part, this trend has come about because of the way our energy industries were opened to outsiders. Stakeholders, call them activists, if you will, found ways, under the administrative procedures acts, innovative policy proposals, hard-scrabble politics and just plain smarts to get into situations where some people thought they didn't belong – thank goodness! The Energy Policy Act of 1992, by creating a collaborative model for policy progress, gave consumer advocates, environmentalists, states and municipalities a seat at the table at places like DOE.

And the shift from compliance to prevention represents something even more fundamental – a shift of responsibility. Compliance is about doing what is required by some “other.” Prevention is about figuring out what to do and doing – taking the risk that you could be right or wrong. It means that those with control are responsible for their actions – we guide all the hands, invisible and otherwise. Those with the power to cause effects have the responsibility for the consequences of their use of power.

kWh → Services

People like Amory Lovins have been trying to tell us this for a long time – a lot longer than my 20 years in the field.

It has never been true that utilities sold anything but services, but the commodity perspective is a stubborn notion that has been hard to kill. I am going to predict that I hear its death knell in the big idea that is related to and transcends the “smart grid” - something I call the “net energy market.”

The net energy market is a market of markets where all customers are empowered and enabled to choose and use from a wide menu of demand, supply and management resources to meet their demand for energy services. It is, for now, the vision at the end of the smart grid rainbow. If, this time, we pause long enough to start with a clearly articulated vision for where we want things to go, we might be able to stay the course a bit better than when we blindly followed “deregulation” wherever it wanted to lead us.

For some places, it will actually be harder than others. The structural delamination of generation from transmission and distribution, and from retail services, that we put in place here in Texas has been a major impediment to bringing a service model to our electric utility sector – but thank goodness the policy makers left the public power utilities in places like Austin and San Antonio, where the trend can continue.

Let me be specific, to leave you with empirical evidence. Austin Energy has been pursuing energy efficiency aggressively for more than 20 years. As a result, the average household in Austin uses 15 to 20 percent less electricity than a comparable home in just about any other major metropolitan area of our state. With rates on par with those in other cities, our customers enjoy lower and more affordable bills. We have more to do, especially for our low-income customers, but by taking the more comprehensive “services” view in Austin, we have saved all our customers billions.

Ratepayers → Customers

Once you stop thinking of customers as milkcows to be visited once a month for a meter read and a check, you open all kinds of possibilities to the utility business. For one – a customer relationship implies an exchange of value. And customers, all of them, have more than bill payments to offer the utility. Their un-mined energy inefficiency is a resource far cheaper to harvest than any other generation option. At Austin Energy, we regularly get some 50 to 60 MW of capacity from our customers through energy efficiency at less than half the cost of gas generation.

This is an idea I tried to articulate, with the help of Danielle Jaussaud and Steve Benesson on the PUC staff back in 1993. We used the term “universality” but now people say “network effects” to describe the fact that extending the service connection (not just the wires) to all customers, including low-income customers, enabled the utility to derive saving benefits at an economic benefit to all customers and the financial health of the utility.

I will share with you the same thought experiment I shared with my energy efficiency and green buildings and product development staff when I arrived at Austin Energy a year ago. What products and services would you offer if City Hall accepted a fixed profit level (adjusted for inflation, but not for sales) every year and you sold electricity services at 10 cents per square foot per month, and you could do anything you wanted to their home?

Row → Steer

This imperative often reveals in management, but is fundamental to utilities as well. The compulsion to move and manage every aspect of the system is solidly engrained in the utility mentality. After all, this stuff can kill you!

Excuses like that are fundamentally true, but only under certain circumstances. And it is a logical flaw to assume that just because system reliability and safety are a must, there can be no other generators, managers, or service providers engaged in the business.

Don't get me wrong, I think the Google meter guys do not, in fact, have it right. But the imperative to the utility is to find ways to incorporate information-rich customer

interfaces **and** introduce new customer control options – in a mode and manner that meets our prime service directives.

And far too little has been done with incentives. Let me give you an example. Austin Energy is now a federal weatherization assistance program provider, working through the fine folks at TDHCA. We are, as far as I know, the only municipal utility running a federal WAP, and this is our first year – though we have run our own weatherization program for some 15 years and 14,000 homes now.

We are learning a lot as we get going here – and one thing that we have learned is that the application completion process is not, you might say, a breeze. So we have started conversations with partners who have been at it longer right there in Austin, about paying them a small fee per completed application. We have overlapping jurisdictions as well as talents, so why not optimize around their capabilities?

Build → Buy

At the staff level of the steer versus row paradigm shift is this one – the shift from building to buying the capabilities and services supports needed to meet the dynamic and challenging environment that will be our future.

I am not just talking about outsourcing – which was always just a cost-cutting measure anyway. Rather, I am talking about a utility viewing its contractual relationships with service support providers as symbiotic and cooperative – exactly the same perspective we would traditionally reserve for organic staff assets.

We have been looking hard at a number of such strengthening – “force-multiplying” (to use the military term) options. Turning individual demand response actions into dispatchable resources - through emergency interruptible load service, enhanced LAR –load acting as resource – and even commercial load curtailment to complement peak-seeking dispatch of the 90,000 plus thermostats we have installed in customer premises.

And I already mentioned our weatherization partnerships.

The point is this – the economic development guys will all confirm that money set to work in the community bounces around, and if it is spent on the right stuff, it creates new kinds of jobs, and system-wide benefits for the whole community. Buying skillsets and ideas only makes sense in a world where natural resources are increasingly scarce and computer-assisted human resources are increasingly abundant. And given the bureaucracy attendant to adding and repurposing jobs in utilities and government, it sure is a more nimble way to go.

Incremental → Integrated

We are solidly into the harder tasks and issues now. Established bureaucracies and incumbents manage risk primarily through incrementalism. New ideas, as I believe Peter Drucker said, have to be 10 times better than the incumbent idea in order to succeed. And nothing is so threatening to incumbency than a new and integrated approach.

Yet integrated solutions are quickly becoming the only option. You can't aggressively save energy unless your revenue model encourages or at least tolerates it. You can't charge customers for smart grid investments – directly or through a rate case – unless you integrate service and pricing offering along with the technology deployment, include some customer education, create alliances with regulators, and back it all up with some kind of vision for the transformation of the grid. Time of use rates are nothing more than regressive rates for customers without the discretion and control options to avoid uncontrolled increases in bills; or maybe they just risk creating a platform for subsidies to free riders. Either way, we need a new understanding of the prohibition on piece-meal ratemaking that both acknowledges an impending era of rapid technological innovation and takes account of the intra-system impacts of changes in cost allocation.

We want to send more customers price signals about production costs in order to tap into their own self-interest in managing bills and to serve society's interest in more efficient allocation of resources. But we also have to ensure that all customers who face such price signals have options and tools to go with their new incentives—so that they can actually respond in more meaningful way than just foregoing the service. So we have to integrate the deployment of services and control capabilities right along with our new pricing.

Let me pause here to address the smart meter debate a little bit. I want to share Austin Energy's approach because I think it offers some insights for avoiding an unproductive polarization. First is the conception of smart grid 1.0 and 2.0. Version 1.0 is about the application of intelligence to the utility grid – something that we should have been doing a long time ago. Version 1.0 pays for itself with productivity improvements, and for us in Austin Energy, the cash came from aggressive energy efficiency programs, such as I have already discussed. Our 1000 MW of saved capacity over the last 15 years has saved billions in customer costs and allowed us to deploy smart meters with cash. And build a power plant, and avoid a rate case for 15 years. Version 2.0 of the smart grid is where the customer side gets heavily involved. And there the difference shifts dramatically.

First, we conceived of and created the Pecan Street Project, a joint effort of the City, the Utility, the University, EDF, and over 100 individual citizens. We sought and received 10 million to add to our 15 million in spending to do a comprehensive Smart Grid demonstration project at a new urban infill development project at the site of our old urban airport. And there, the focus is not on technology, but on demonstrating a wide range of service and pricing options to a wide range of customers to see true win-win service solutions. A sand-box for experimentation.

As we know, pursuing integrated solutions, while more complex, often yields multiple, often serendipitous benefits. Compact fluorescent and LED lights not only cost less to run, but decrease the need for air conditioning to cool bulbs. Weatherizing before you replace the air conditioner reduces the capital cost of the replacement equipment, extends its useful life, and delivers compounded decreases in operating costs; and produces more local jobs in the process. The more integrated, the more benefits.

Programs → Products

Daniel Quinn, who wrote *Ishmael* – a book about a conversation between a man and a lowlands gorilla – once said “the world will not be saved by old minds with new programs, but by new minds with no programs.”

I don't think he was saying that all of us old minds have to just disappear before progress can occur, but that we have to change the way we think about doing the things we do. My energy efficiency staff is among the best in the world. They thrill at challenges and thrive on new opportunities to capture energy savings wherever they may lie. But the established utility culture conceives of energy efficiency PROGRAM delivery, not PRODUCT offering. And the difference is not just semantic. At Austin Energy we are increasingly trying to grasp this difference to exploit the benefits of “productizing” our energy efficiency offerings.

So we ask:

- What do they want?, not What do we offer them?
- What would they buy if they didn't **have to** buy from us?
- What features are attractive?
- How do we increase market penetration?
- How does this impact our brand?

In a world in which customers can own their own generation, their own mobile and storage stationary device, their own home automation systems, and their own fuel supplies, our old minds need some serious furniture rearranging – and a product orientation to energy services might be just the ticket.

Building Energy Management → Building Conversations

There was a great article in the business section of the New York Times on Sunday about people trying to learn about and grapple with a concept some are calling the singularity. A time when the melding of human and computer capabilities exceeds the sum of the parts and reveals an “intelligence” far greater than we can now imagine. I am not an expert in the topic, having just started my first science fiction novel on the topic – but I do share a sense that the pace and richness of information technology development is, indeed, potentially awesome.

For me, the most fascinating manifestation lies how buildings are increasingly likely to interact. The shift I cite here is the one where we progress from thinking of buildings as wholly passive or under our control to the stage where they are, for practical purposes, increasingly sentient. Smart grid isn't about me setting the thermostat from my iPhone, though that will be fun, it is about a constant flux of system conditions and values and transactions all reconciling continuously against preset protocols and increasingly occasional human interventions.

In another talk I give on the subject, I ask the question – “When buildings talk, what will they say to each other?” I imagine the conversation could include snippets like:

- I have some extra electricity – what am I offered?
- Yes, I can offer some ramp control for your micro-turbine, now? On a regular basis?
- I can curtail – what duration and magnitude?
- Can you send a service man?

Prescription → Performance

And when all that happens, we can awaken a new kind of engagement by government with regulated entities. No longer do we have to fight the quixotic battle of constantly seeking to stay ahead or even up with the dynamic churn of technology and market conditions. Rather, we can focus, in the government sector, on setting the standards of performance and creating the market and regulatory conditions for private sector innovation. This might sound vaguely like the messages from the era of big deregulation, but that would be a mistaken interpretation. For I see a strong responsibility in government for sound regulation to make it happen.

What I am saying is that it is a fool's errand for government to try to keep up with all the new tools likely to emerge on the supply, demand and energy management fronts. And deciding which R-factor or efficiency rating is minimally required for a particular part of the house or piece of equipment in it will, by definition, fail to recognize the variety and variability in the build landscape. We know that reality, but accept it as a cost of doing business.

Imagine what is possible if we can break out of that old paradigm, and government can set a standard like “capable of being a zero energy home over the course of a year with the addition of a small solar system.” That will be our standard in 2015 – Austin Energy manages the municipal building energy code as well. Under such a new paradigm, the standard can focus on the performance to be achieved. Along the way, we can set standards like “kWh per square foot per year” – something that could implicitly recognize the differences between building types, age and usage. And the building's active systems can play a part in meeting the performance standard not just when built or remodeled, but on an on-going basis.

The same approach can be used for weatherization, whole-house energy efficiency services, plug-in vehicle tariffs, distributed generation tariffs, and other features of the smarter utility of the future. With such a standard we can offer flat rate service pricing to all customers and still exploit energy efficiency to the maximum possible.

Price → Cost

All of this can then point us toward a real shift, finally, from price to cost. It is what we have been talking about since the least-cost planning days, and may finally be made real when we take an integrated view of the value of services and products offered by utilities that serve supply, demand, and management options to customers with a focus on performance.

After all, our low-price strategies, energy policies, agricultural policies, educational policies and other key policies have turned out to be something we just can't seem to afford.

And it will enable a shift in our perspective that will allow us to tackle the issues that have always sat on the periphery of our policy and action – the so-called externalities, the equity and civic impacts of our pursuit of lowest price regardless of cost.

Resources → Capital

The shift from price to cost also enables a change in perspective about the bounty on which all our prosperity depends – the Natural Capital that underpins all our so-called wealth.

Rather than viewing our air, water, soil and minerals as resources to be developed – to deliver goods and services at lowest price – we can begin to understand the value of natural capital and that a true going concern does not systematically deplete its equity solely to enrich current stockholders.

And if we can do it for the bounty of the Earth, we might just learn how to do it with the most valuable resource of them all – humanity. Imagine what would happen if we truly embraced a view toward every electric customer as a component of our community human capital. What would utility services look like then? This is the advanced view of shifting from ratepayers to customers – and will be worth the effort.

Prevention → Sustainability

This leads to the last and cumulative shift – and takes us back where I started.

I mentioned that we largely moved from compliance to prevention. And it is a good thing.

Now we have to go the rest of the way – from prevention to full triple bottom line sustainability. We must and will increasingly be expected to shift from balancing acts between economy, equity, and environment to optimization strategies that bring us triple-bottom line benefits for people, the environment and the economy.

When we embrace a systems view, and value all our resources as capital to be nurtured, not merely resources to be exploited, we can actually start factoring in the value of time and the interests of future generations.

And then, we might start tackling the most challenging problem of our time – climate change.

4 Easy Pieces

Let me offer you just a little insight into how a sustainability mindset can help us address a problem as big as climate change. But first I want to stress that these ideas apply to any kind of long-term planning and initiatives. The hardest thing about climate change is that the problem is so big, so diffuse, and so “out there.” It lacks salience. The time scales stretch into the decades and centuries – as do our impacts.

- Discounting the future
- Fire insurance
- Valuation of the invaluable
- Everything costs something

And remember – with this mindset in place, we can evaluate our current actions, efforts and investments in a wide range of endeavors – reforming energy policy, changing utilities, building a green jobs reality, revitalizing our communities. But we need to share simple tools like these to help people understand.

Utility of the Future → Utility We Need Today

So, in closing, let's recap.

To be the utility we really want, our utility, all our utilities, need to think hard about some of these ideas. I assert that they need to:

- Catch up to most the world by getting past compliance and moving to prevention.
- Stop pretending to sell a commodity and embrace a real service mentality.
- Start treating all customers like customers – who increasingly have choices.
- Learn to let go a little – more steering, less rowing.
- Engage the community in solutions – build less, and buy more from teams in the community and business sector.
- See the forest, not just the trees – pursue integrated solutions, practice integrated thinking.
- Develop more products and fewer programs – sell things to customers that they want to buy.
- Foster the emergence of building energy conservations.
- Set and adopt performance standards, they are preferable to trying to prescribe perfect solutions that never really are.
- Support the transition to a least cost energy policy – one that we can afford.
- Treat your assets as capital – to be protected and grown – not resources for exploitation and depletion.

And with all that, move to a triple bottom line ethic of sustainability.

We are living in the future, and we have the right to expect a utility that will keep up with us.