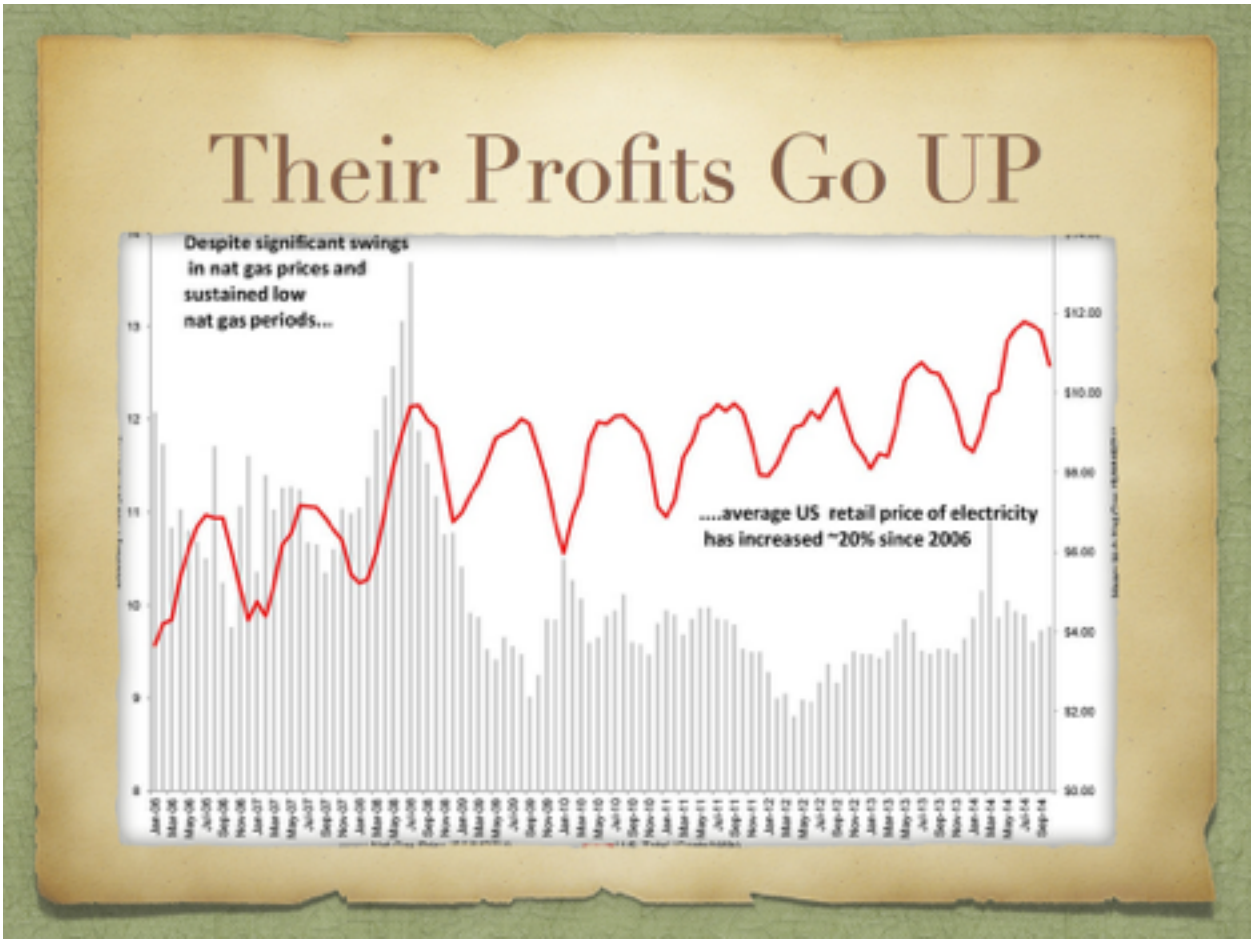
Let's start out this conversation with a comment from a famous NY businessman born 168 years ago this month. The creator of the electrical revolution!

We are like tenant farmers chopping down the fence around our house for fuel when we should be using Natures inexhaustible sources of energy — sun, wind and tide. ... *I'd put my money on the sun and solar energy.* What a source of power! I hope we don't have to wait until oil and coal run out before we tackle that. Thomas Edison

He created a new commodity (electricity) that we need now to survive and thrive as a society and we now have to understand what that commodity is worth and how to fairly distribute it. The reason for the urgency in the discussion, is simply that his vision is not fulfilled, the distribution as well as the production model we are following is outmoded. Our utilities inefficient business plan is one that society and the NY environment can no longer can afford to support.

First this commodity has things that make it stand apart as well as tie it directly to the rules of supply and demand that all others have to live within. The one that utilities have tried to thwart first is, we needing more. We are paying more for something that we are using less of. That is a fundamental disconnection from reality of the marketplace.

Then when faced with a gift like NG gas price drops and other regulatory windfalls they ignored their rate base and just kept charging more and more for less service and reliability. Well people (ratepayers) are fed up with this amount of greed.

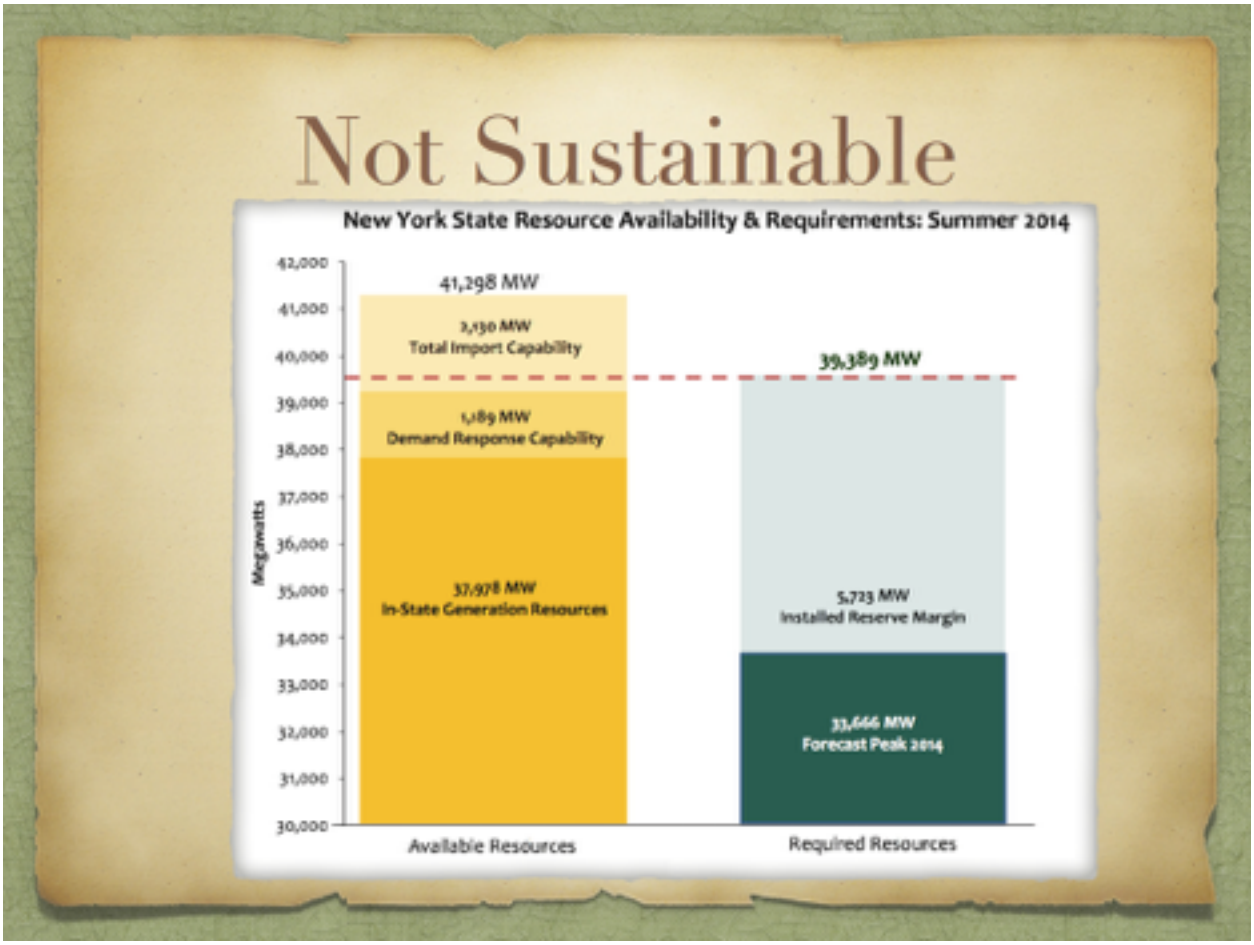


The last shock is that the resource through long line “grid” distribution is not up to the task and entities like FERC have to step into the states regulatory process and set up things like the new capacity zone in NYS.

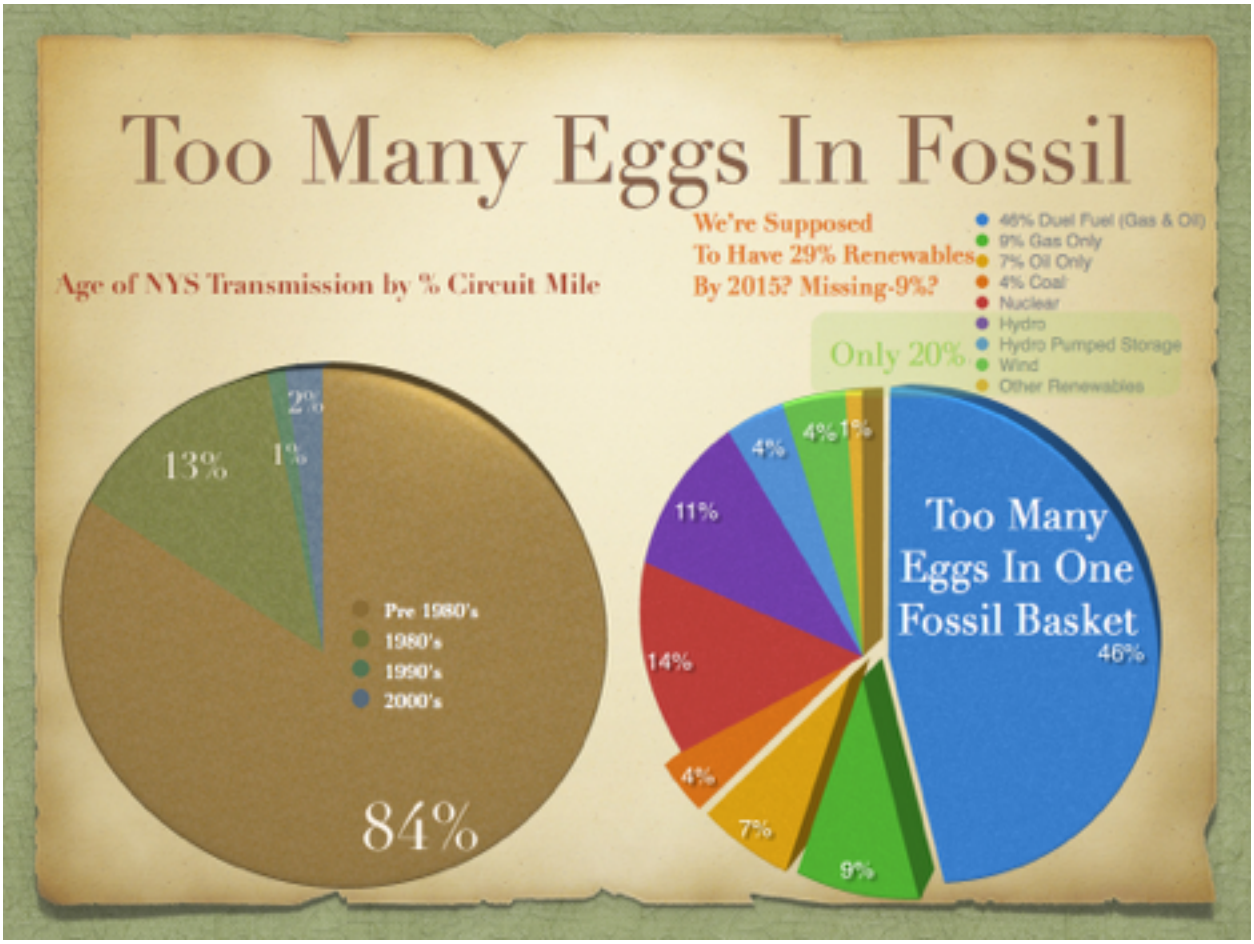
In 2014, power resources available to serve New York State total 41,298 megawatts in combined capacity of power projects, demand response participation, and power import capability from neighboring electric systems. The total is 154 MW lower than last year, but it remains above the projected peak demand of 33,666 megawatts and in excess of reserve requirements. That's what we are banking on, we also pray for no failures.

- The margin between available resources and reliability requirements has narrowed in recent years.

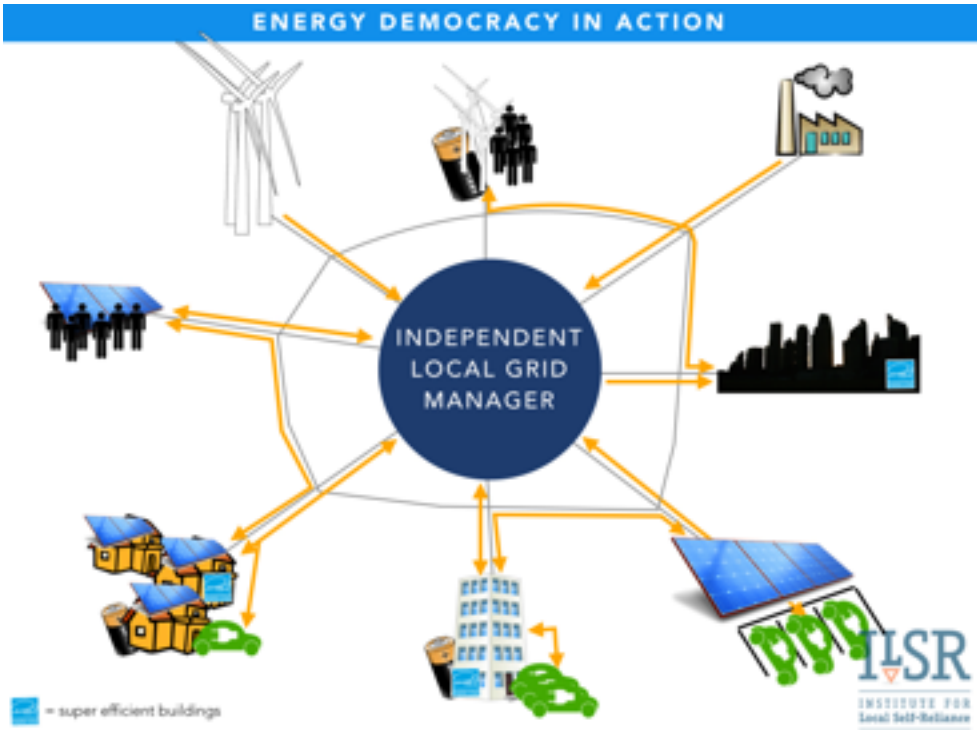
- In 2012, power resources totaled 43,686 megawatts, more than 5,000 megawatts greater than reliability requirements (peak forecast plus installed reserve margin). In 2014, the 41,298 megawatts of available resources are slightly more than 1,900 megawatts above the installed reserve margin requirements. Slim Margin…..



Speaking of Unsustainable how about the foolish amount of reliance on natural gas a polluting fossil fuel and the failed promised Renewable Portfolio Standard in NYS?



I am stating we need *Reforming the Energy Vision* (REV) to have more teeth and mean more than a 2 way grid flow.
As Our Energy czar states and PSC chair tries to implement in REV, fundamental reform requires a return to significant DG (even if we are able to prop up the aging grid in time). A fundamental switch in fuels (not fossil or nuclear dominated) that offer



reliability and clean energy must start now. We know now how to do this in a cost effective way in the state and we need to look forward and create the industry, jobs and infrastructure to do that now. This is NY where the electrical revolution began in NYC at Thomas Edison's first ever Utility power plant. We can do this and create the second clean energy revolution here too.

We need to have aggressive, realizable, enforced goals to provide more renewable energy, implement DG and conservation on a massive scale. One examples of poor goals setting is our 30% limit for renewable energy by 2015. This simply turns out to be a low level that we still can't even seem to reach. One way to fix this is to eliminate the 16% of legacy hydro in the state from that artificially inflated (by including old hydro) total. We need to set a true aggressive 50% renewable energy goal in ten years. The other issue in renewable energy is the meager limit given for net metering totals in any given utilities service area, thankfully now moved up to 6% preventing a shutdown of installs. This needs to be set at 30% which is perfectly achievable and sable for the present distribution system as proven by Dr. Perez's study for the PSC years ago. A low RPS limit prevents companies from investing here and businesses from growing to meet this pressing need. Looking at energy generated in New York, which excludes imported power that can be used for the energy authority's targets, about 20 percent came from hydro, which includes decades-old projects along the Niagara and St. Lawrence rivers. Wind accounted for 2 percent, and other renewable sources accounted for another 2 percent, according to 2011 figures from the operators of the state's power grid. We can do better than the low level of solar installed for years in a row. Even the 3,000MW expected now is paltry compared to other states installations. The recent GTM research reports indicates we are listed as ranking 8th nationally in solar installations for Q1 2014 we can and must do better. CA expects to be at 50% renewables and over 20% of their power from Solar energy soon. Yes conservation is number one but we need to be mindful that businesses and people will follow the market indicators and need to be shown that government is serious about curbing excesses and implementing clean energy before they feel invested in reform.

Concerns about the antiquated utility model relying on old outdated infrastructure and generation (after years of neglect requiring massive investment to prop up) is not likely to go away anytime soon. Barclays, In their recent analysis of the utility industry, downgraded electric utility bonds across the sector because they "believe that a confluence of declining cost trends in distributed solar photovoltaic power generation and residential-scale power storage is likely to disrupt the status quo." We need a new model and not be satisfied with utility intransigence in the face of looming disruption. We need to insist on a REVolution and functionally bring the power back to the people. *Reforming the Energy Vision*, is supposed to be how to make an open and transparent marketplace that puts utility customers on an even footing with utilities in providing key energy services. Under the current regulatory process and oversight the odds are stacked against that truly happening.

What one utility, Iberdrola, sponsored seminar has characterized REV as being about:

By all accounts the nature of the electric grid from an operations and business model perspective is in a state of genuine transition. A confluence of advancing technology, customer preferences, policy action and increasing third party competition is causing electric utilities to reconsider their operational capabilities and strategic direction. The increasing activity at the grid edge with DER at the premise level is altering the longstanding central station driven electric service to introduce two-way power flow on the distribution grid.

The 21st Century Utility fortunately is now getting serious policy and regulatory attention. In New York the Reforming the Energy Vision, or REV process, is the most comprehensive effort thus far to design the modern distribution grid. At heart of REV is the Distributed System Platform (DSP) including an effort to develop the underlying functionality and enabling technologies necessary to support this new dynamic operating environment.

You would think by this very description that utilities finally get it that they are on board for change, but is that truly so or is this lip service to cover back room maneuvering to kill reform and continue the failed monopoly model? Why do I take that stance? Possibly because of rate cases already filed in response to REV. Like Fortis arguing that "Community Renewable Energy" means that they get to install solar. Further they wish to be able to install Microgrids that they would also own. Both actions are fundamentally rolling back the needed reforms that were put in place in the late '90's to break up their monopoly power and to stop them using the rate base to monetize their efforts to bar others from competing in the marketplace. Just the opposite of what REV is supposed to be about. We do not need production and distribution to be in their stranglehold.

According to the press utilities are gaming the system and will continue to do so because no one goes to jail when they do? Forgetting the judgments against Keyspan and separately Constellation for gaming the system and cheating ratepayers. Read the headlines WALL STREET PROFITING FROM GRID DEMAND — Julie Creswell and Robert Gebeloff of The New York Times: Congestion contracts are complicated financial instruments that were designed to protect power producers and utilities in places like New York from price swings when power demand surpassed supply. The Times investigated 150,000 such contracts auctioned by NYISO since 2003 and discovered that major banking firms like DC Energy are the ones quietly cashing in.
"DC Energy — and its profits — are an unexpected result of the deregulation of the nation's electric grid. The idea behind deregulation was to eliminate old monopolies and create robust, competitive markets that would encourage investment and ultimately lower costs for consumers. But in most places, electricity bills have been rising, not falling. While fuel prices, taxes and fees have added directly to the costs, Wall Street-style traders have contributed in subtle ways by turning new markets, like the trading of congestion contracts, to their advantage, The Times analysis found. The contracts have attracted big money: More than $2 billion has been invested nationwide in the monthly auctions for contracts since 2011, according to Platts, a trade publication."

If you think thats bad what about: P.S.C. REBUFFS BRENNAN — Capital's David Giambusso: The Public Service Commission has ruled against Assemblyman James Brennan in his bid to force the state's power generating companies to fully disclose redacted financial reports. P.S.C. officials, in a decision issued Wednesday, said releasing the information could lead to "predatory pricing" and harm competition. Brennan, a Brooklyn Democrat, said he is considering suing the P.S.C. over the decision. He suspects state generator operators are overcharging consumers, potentially by billions of dollars.

Money unfortunately equates to power (pun intended).
Distributed renewable energy is a threat to fossil-fuel-based utilities and industries. The more clean energy consumers produce, the fewer assets utilities get to add (with a guaranteed profit) and the less energy gets sold. It turns the utility model upside down. It would be naive to think that these incumbent forces would not push back, hard, against renewable energy on the front lines and in back rooms.

Look at ALEC, the American Legislative Exchange Council, to observe one way that entrenched interests are fighting back.

With almost 2,000 state legislators as members, ALEC describes itself as the "state legislators' think tank" and "nonpartisan." Despite its nonpartisan claim, the board is made up almost entirely of Republican and Tea Party-associated legislators.

ALEC produces "model bills" for its members to take back to their respective state houses. The issue is that ALEC is funded by firms such as Koch Industries and Exxon Mobil, according to tax documents acquired by *Bloomberg News* in legislation involving carbon pollution. Peabody Energy, the world's largest private coal company, is an underwriter, as is Duke Energy, according to The Center for Media and Democracy.

ALEC opposes renewable portfolio standards (RPS) and suggests that free markets, rather than mandates, should steer the energy sector.

In addition to opposing RPS, ALEC blocks climate change legislation, and as reported in ALEC Exposed, has crafted legislation to block the EPA from regulating coal ash.

ALEC's RPS-Killer: The "Electricity Freedom Act"

Todd Wynn, the head of ALEC's Energy, Environment and Agriculture Task Force, was quoted by the AP as saying, "[The council] has always been opposed to energy mandates, but in 2012 we picked up the debates on renewable energy targets specifically."

That decision emerges from ALEC as a "model bill" called the "Electricity Freedom Act," which seeks to repeal the Renewable Portfolio Standards now in place in 29 states and D.C. Legislators are free to take this model bill, written with help from the vehemently libertarian Heartland Institute, and attempt to foist it on their home states. It has been suggested that the Arizona Renewables Massacre was ALEC-inspired.

ALEC's corporate underwriters have deep pockets, political savvy, and come prepared for the long fight. Solar and renewable energy industries had best be similarly prepared. The PSC should really decide which side of the fence it sits on and what can be done to protect ratepayers from the system being gamed by the utilities and fossil fuel purveyors.

The writing is on the wall: clean and reliable rooftop solar, energy efficiency, and smart grid technologies are here to revolutionize the grid. But instead of looking to get ahead of these trends, many utilities are digging in and defending their business-as-usual approach. These utilities make a guaranteed rate of return on infrastructure, including power plants and transmission lines. As a result, utilities continue to invest in conventional dirty energy resources that may become obsolete well before the plants will be retired.

Then we should consider what legal action that Big Utilities took recently to banish DR. The Utilities just don't "get it" times up, they continue to deny and use every means to thwart progress or save ratepayers costs or insure the reliable infrastructure .

The Solicitor General and FERC officially appealed the ruling that vacated Order 745 to the Supreme Court in a petition for a writ of certiorari. The mandate from that order was stayed pending final Supreme Court action.
The filing laid out the history of the industry and its restructuring before going into an explanation of how demand can help balance the grid just as supply does. In many industries, demand is responsive to price, but that has not been the case in the power industry, the filing explained.
Demand becomes flexible when it is paid to do so and if those payments are cheaper than the next unit of supply, then grid operators can balance the grid at a lower cost using DR, it added.
Both the Energy Policy Act of 2005 and its follow-up, the Energy Independence & Security Act of 2007, had language on FERC's authority over DR. The former told the commission to remove barriers to DR taking part in the "energy, capacity and ancillary services markets" while the latter told FERC to lay out a roadmap for the resource's future.
Order 745 came after the studies set up by the 2007 bill and it directed ISO/RTOs to pay DR the full LMP in their energy markets when that would be cheaper than the next unit of supply. Many argued that customers' cost of supply should be subtracted from the LMP payment, but FERC said it did not look into the costs or benefits of production from individual generators, so it would not do the same for demand.

The two-judge panel of the District of Columbia Circuit Court of Appeals found that FERC exceeded its authority in setting up Order 745 because DR is a retail transaction and thus is under the jurisdiction of states.
But DR only pays customers who want to take part in the wholesale markets, the FERC filing said. State commissions can and do block federally regulated DR in their territories. But that theory holds that FERC can "lure" participants into the wholesale level to create jurisdiction, the appeals court said.
FERC argued the appeals court "seriously misinterpreted the (Federal Power Act) and misapplied basic principles of deference to agency interpretations of statutes."
Order 745 regulates the price that wholesale purchasers of power pay through the wholesale rate set in auction mechanisms run by ISO/RTOs for a cut in use by DR providers. The DR providers are "actual and integral participants in wholesale markets themselves" and their impact is much more direct than the effect exerted by retail consumption generally or generation inputs.
"The court's decision appears to bar FERC from regulating any aspect of demand response participation in the wholesale markets within the commission's jurisdiction – a practice that all commissioners agreed in the rule making plays a significant role in those markets," the petition said. FERC's interpretation – that the Federal Power Act gives it the authority to regulate wholesale DR – "is the best and indeed only sensible reading of the statutory text," it added. A complicated mess with ratepayers held hostage?

Fundamental reform is just that, enabling choices, providing equal access to the grid, a rethinking of what is truly possible with present technology not just continuing the mistakes of the past or blindly following a outmoded business model.

For example:
Fundamental reform requires a new utility model, "Big Data" allows consumers to ask the fundamental question, who do I want to buy from & who has a product that serves my needs? We have the ability to buy power on a 15 minute incremental purchase block. This is technically possible now. Consumers can make that decision to buy from the provider that offers them the product they want when they want it at the price and fuel source of their choice. Reform means putting the power back in the hands of the consumer and charging power providers with the task of offering services that people actually want to buy.

Looking at the pay as you go utility power purchase option, offered to typically poor communities now, we find that the old utility model is being usurped. People can track their power usage in almost real time they can make decisions on when and how to consume based on that knowledge. This is a fundamental shift in the dialog typically consumers find out about their usage two months in arrears when they are hit by a ever increasing bill. They have little options on better suppliers or more innovative services since typically the retail ESCO services providers are out to use every advantage that is “legally” available to game more money from their customers. This is functionally and financially unsustainable consumers need a dedicated advocate to fight for their rights and a voice in where and from who they make purchases. We need to turn the model

on its head and provide choices and options that actually appeal to peoples needs, wants and pocketbook.

In previous comments I stated: ***The utilities want one way reform*** *(how can they make more money or have more control by being the producer & seller of power) in a increasingly competitive market. NY is faced with a 40 billion investment in the grid. How can we invest wisely is the fundamental question?*

I reminded the Commission, also in a previous comment on the last two winters price spike due to NG availability, that a majority of our utilities now have foreign ownership and that utilities have been caught gaming in the system in the past for their economic gain in effect cheating the ratepayers.

The Utilityproject.org tells us that:

Fundamental reform requires a entity solely charged with the monitoring and enforcement of the providers of electricity (wether they be ESCO's, power producers or the utility distributors of power). The NY Governors Moreland Commission signaled the need for reform, in its final report issued. This was supported by consumer groups including AARP, Consumers Union, NYPIRG and the Utility Project. The Assembly, for the second year in a row, passed a bill to create a more independent office with greater powers, including the ability to question actions of utilities and their regulators in court. Editorial support weighed in support of the bill.The leader of the Senate IDC indicated support for reform. Unsurprisingly, Verizon and the investor-owned energy utilities opposed any strengthening of the consumer advocacy function. In the final days and hours as the budget deadline approached, action on improving utility consumer advocacy was blocked. ***MY Comment, This makes fundamental reform like REV just that more difficult to implement.***

Meanwhile there are major issues involving reasonableness of rates set privately in the wholesale markets with no real FERC review and no possibility of price correction when the markets are gamed; controversial new NYISO capacity market changes slated to raise rates 10% or more in the Central Hudson area, and pending FERC initiatives that could thwart efforts of states and publicly owned utilities to secure reliable electricity at reasonable prices through self-supply or long term contracts.

In all these and other matters, such as the recent price spikes, there is little voice for New York consumers, who continue to pay prices that are at or near the nations highest, who after the spikes are even more indebted than before to the utilities, and who are facing greater hardship. In the winter some upstate utilities forbear from shutoffs as a bill collection measure but they threaten non the less.

At a May 15, 2014 New York PSC Technical Conference on Winter Energy Pricing and Supply, the Utility Project pointed out that regulators have adopted rate setting mechanisms that rely too much on gas and electric spot markets, thus unduly exposing customers to spiking rates.

All of the above leads to another conclusion of the Moreland commission the brittle nature of the grid and the utilities providing that power. For example the structural issue that many experienced hands that worked for those entities are now retiring and we don't have replacements. ***My comment, Can we fall into being asleep at the switch again?***

The impact of excessive wholesale prices is directly passed through to retail consumer prices. No independent advocate for New York consumers is actively participating as a party in these important proceedings at FERC,or in the judicial review proceedings, which often follow significant FERC order and play an important role in rate matters. At a May 15, 2014 New York PSC Technical Conference on Winter Energy Pricing and Supply, the Utility Project pointed out that regulators have adopted rate setting mechanisms that rely too much on gas and electric spot markets, thus unduly exposing customers to spiking prices.

The Moreland Report lamented the “decline of New York utility regulation” noting that the New York Public Service Commission, historically was nationally preeminent in utility regulation, but had in the past 20 years had years become less than stellar in its composition and achievements. The utilities argue that funding a utility advocate would raise rates. Meanwhile, as an AARP report shows, utility rates paid by customers include the utilities’ own expenses in seeking rate increases. AARP Report- David v. Goliath Why consumers are losing New York’s utility game. The public needs a fully fuded protector.

The independent Moreland Commission recommended improved consumer advocacy and reform of the PSC procedures, after that New York lacks well resourced, independent advocacy for residential customers in utility matters.

My observation, unfortunately also looking at the recent valiant efforts by Audrey and the commission to stop abuses by ESCOS on retail customers accounts the good reforms were blunted by special interests. This is frankly unacceptable.

My summary comment's*:*

As Our Energy czar states and PSC chair tries to implement in REV, fundamental reform requires a return to significant DG (even if we are able to prop up the aging grid in time). A fundamental switch in fuels (not fossil or nuclear dominated)

that offer reliability and clean energy must start now. We know now how to do this in a cost effective way in the state and we need to look forward and create the industry, jobs and infrastructure to do that now. This is NY where the electrical revolution began in NYC at Thomas Edison's first ever Utility power plant. We can do this and create the second clean energy revolution here too.

One immediate mechanism that we have at hand (besides a full time staffed consumer advocate) is to simply give power back to the people, how, simply with a system that seems to be gaining favor with the governors office as well as the commission.

Community Solar

The best strategy for large scale solar access may be community solar, a solar array co-owed by multiple households that don't need to own property. In November 2010, ILSR's Community Solar Power report analyzed most of the existing community solar projects to assess which models had the best potential to replicate. Since then, community solar laws have been enacted in states from Colorado to Minnesota, with a total of 11 states allowing "virtual net metering" for electric customers to share the output from a shared solar array. Colorado's law includes a set-aside for low-income participants.

SharedRenewables.org maps (or used to) both the status of state policy supporting community solar and the completed community solar projects, the Renewable Northwest Project maps projects in that region of the country, and the Solar Gardens Institute has several more resources.

As enacted in most locations, community solar allows participants to buy shares of as little as a 1/2 a panel (100 watts) for +$200. The electricity generated from that panel is credited back to the customer's electric bill. It requires no credit check. Even in places with relatively low electricity prices, the panel will recoup $15 per year or more. And prices continue to fall rapidly.

The history of energy is one of haves and have nots, but the advent of cost-effective, widely distributed solar is an opportunity to reverse course and put the power and money in the hands of anyone.

According to the National Renewable Energy Laboratory, only 22-27% of residential roof space is suitable for on-site solar production. This leaves the majority of homes in the dark, without the economic and environmental benefits associated with solar.

While we are smart to want community solar to democratize PV allowing ratepayers and others that can't access solar because they are renters or their structures are not suitable for installations access to clean energy, but the utilities have this clearly in their crosshairs. As stated before **utilities want one way reform** and FPL, Duke, Fortis & others clearly wish to control this "community", do their own projects and seek to use their rate base to control the market barring competition including controlling production as well as distribution. Unfortunately in NY the commission seems willing to play right into their hands. The recent ruling "interpreting" remote net metering in NY effective kills this market for muni's with brownfield/landfills (where large projects should be located)

and does nothing to regulate utilities since they nave no issues with interconnection and metering location. This is in effect a capitulation of the marketplace to the monopolies.

Community Choice Aggregation (CCA)

The best choice for Reforming the relationship that the ratepayer has with the utility is to enable CCA. We are talking about creating the ***Hudson Valley CCA*** now.

A model under discussion would likely consist of a board of 8-10 governors one of which will be supplied by each county that participates with a place for a total of six pub board members. Three professional CCA utility managers will also sit on the board and handle the day to day business. One will be the Ceo another CFO and the last will handle interaction with power suppliers and green projects.

The Hudson Valley CCA will be set up as a not for profit or a public benefit corporation with all revenue given back to the rate payer participants or to renewable energy projects coupled to conservation systems which will reduce rates for everyone. We could start with one county like Ulster to prove the model and with the same infrastructure enable the model for others to join.

Others have put it better than I can:

Jesse Jenkins is a researcher, analyst, and writer with expertise in energy and climate change, electric power systems, energy policy, and innovation policy.
His Summary of the current contentious regulatory environment.

The electric power sector is currently being transformed by the growth of rooftop solar power and other distributed energy resources, including distributed generation and storage, demand response, and electric vehicles, as well as the proliferation of advanced power electronics and information and communication technologies commonly referred to as “smart grid” technologies. These trends have the potential to reshape the way electricity services are delivered and electric power systems are designed and managed.

This ongoing transformation of the power sector presents new challenges for the regulation of electricity distribution utilities. In particular, regulators face greater uncertainty regarding how distributed resources will change the use of distribution networks as well as the costs and capabilities of new smart grid technologies. In addition, distribution utilities are on the front lines of the evolving power sector and interface regularly with customers and equipment vendors. Utilities thus know far more about emerging technologies and the changing use of the grid than their regulators. The regulator is therefore at an informational disadvantage, which exacerbates temptations for utilities to engage in strategic behavior to increase allowed revenues. These new challenges plague both conventional cost-of-service regulation and so-called “incentive

regulation" approaches to remunerating utilities. He proposes models for change and reform.

- Jenkins & Pérez-Arriaga (2014). The Remuneration Challenge: New Solutions for the Regulation of Electricity Distribution Utilities Under High Penetrations of Distributed Energy Resources and Smart Grid Technologies.CEEPR Working Paper (No. 2014-005). Cambridge, MA: Massachusetts Institute of Technology, September 2014.

For more from Ignacio (and colleagues) on improving regulation for the evolving power sector, see:

- Rothstein, Besser & Jenkins (2014). Leading the Next Era of Electricity Innovation: The Grid Modernization Challenge and Opportunity in the Northeast. Boston, MA: New England Clean Energy Council, August 2014.
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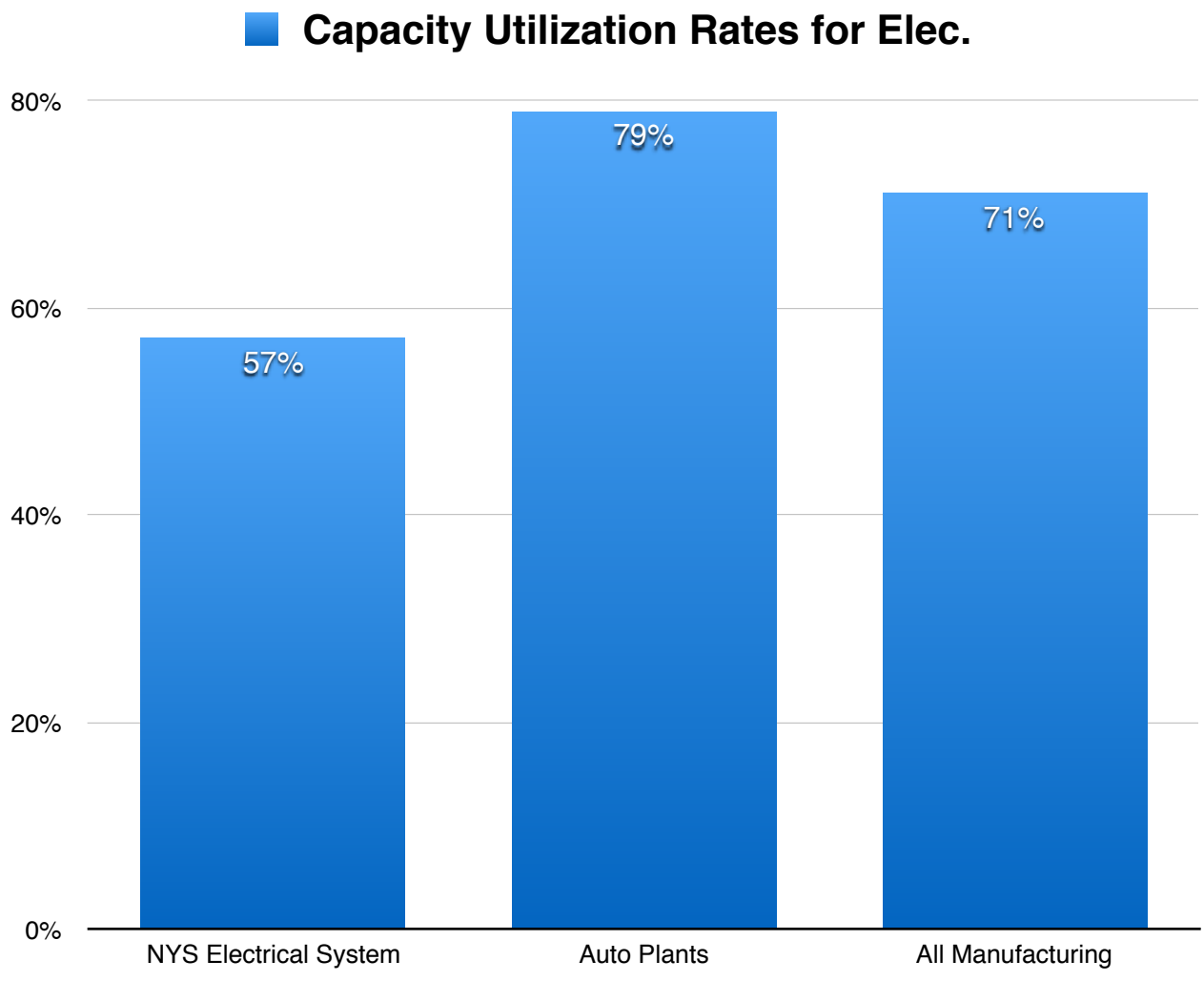
- Pérez-Arriaga et al. (2013). From Distribution Networks to Smart Distribution Systems: Rethinking the Regulation of European Electricity DSOs. THINK Project (Topic 12). Florence, Italy: European University Institute, May 2013.

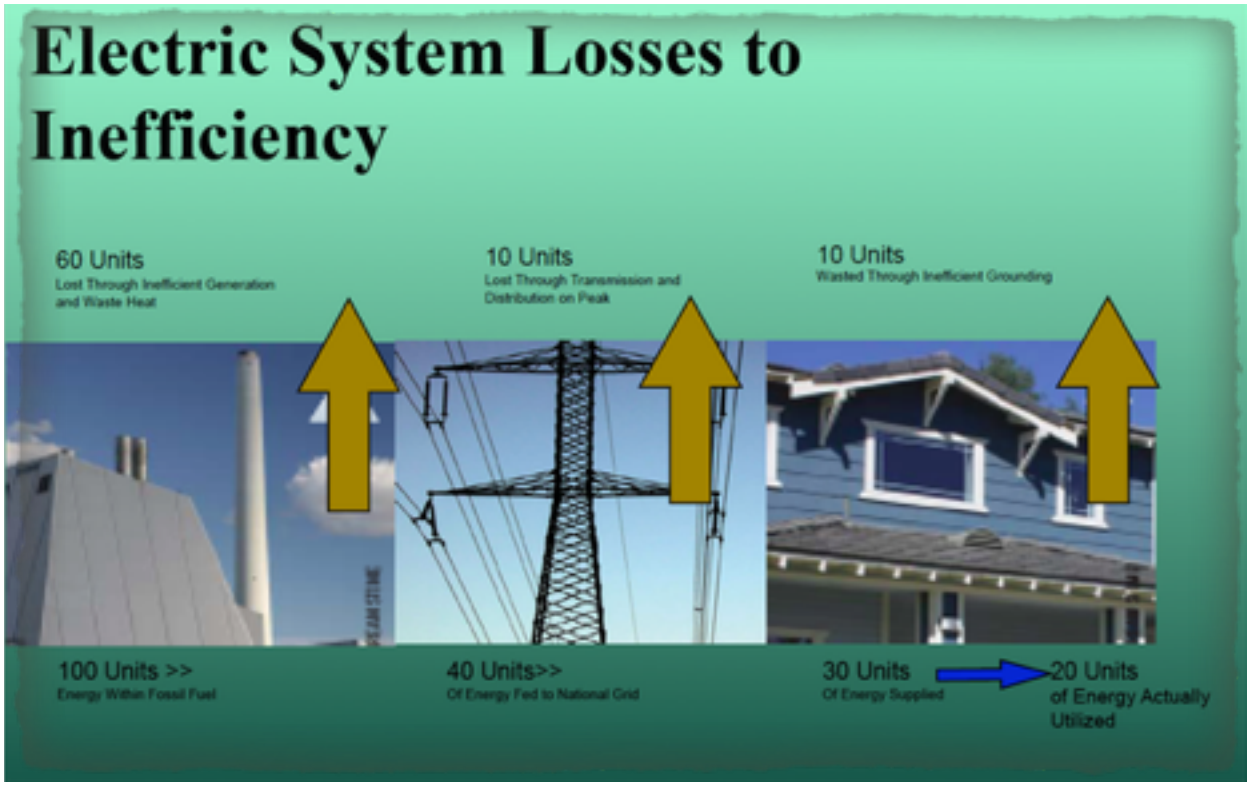
Let's look at this first analytically even as a dollars and cents problem?



If we switched to clean distributed energy power sources we would probably need 36% less overall generating capacity in the state. Why is that true and how is it possible?

The average asset utilization rate for a typical IOU is below 50 percent according to a recent report published by GE. That is unsustainable for any industry!

Simply following the presentations by Richard Kauffman and others you start see the enormity of the waste in our present electrical production and distribution system and



beginning to understand why “unsustainable” has become a catch phrase as well as a logical conclusion of this lead in discussion to REV.

But I do not think the full extent of the waste is apparent to the public and the regulators because it goes more deeply than the mechanics of bidding through the ISO. With spinning reserves and other fundamental mechanical problems with moving power over distance my contention is that we probably are really only seeing about 10% of the fuel energy expended eventually turned into electricity at the doorstep (a 90% loss of fossil based energy expended, resulting in massive greenhouse gasses generated and the loss yearly of around 3,000 NY lives due to air pollution) This translates in to 2% of our GDP that we could avoid being thrown away and a problem in lost lives exceeding things like drunk driving.

The graphic below is FERCS assessment of the wasteful utility grid poor conversion of fuel to electricity.

- 100% Fuel- 60% Loss in first Conversion
- Only **20% Delivered** as Electricity
- <60% Capex & spinning reserves wastes even more energy, unsustainable

So yes this deserves our full attention a “all hands on deck” response to reform and change. REV should really mean a REVolution in our way of producing and using electrical power. When you couple that to a considerable effort in conservation savings we might easily see a 50% reduction in our energy needs with a significant boosts to our economy, state budgets and jobs /industry created in the state. If it costs 14.9 cents perkWh on average and you add in another 5.7 cents for health and climate externalities for a total of 20.6 cents kWh in the state. Consider that by switching to power produced near the load with clean power can save most of the costs of the 30 billion in capital investments needed to prop up the inefficient present system in the next ten years you can see what this means to the average NY resident.

Perhaps most crucially, a reform requires thinking different like Steve Jobs advocated or even "first principles thinking," a mode of inquiry that relentlessly pursues the foundations of a problem.

"I think it's important to reason from first principles rather than by analogy," Elon Musk said in an interview with Charley Rose.

"The normal way we conduct our lives is we reason by analogy," he said. "[With analogy] we are doing this because it's like something else that was done, or it is like what other people are doing. [With first principles] you boil things down to the most fundamental truths … and then reason up from there."

The first-principles approach has deep roots.

Over 2300 years ago, Aristotle said that a first principle is the "first basis from which a thing is known" and that pursuing first principles is the key to doing any sort of systemic inquiry — whether in philosophy, as he did, or in business, as Musk does.

While Musk admits that arguing from first principles "takes a lot more mental energy," you can end up with novel or even groundbreaking results.

Someone could — and people do — say battery packs are really expensive and that's just the way they will always be because that's the way they have been in the past. They would say, "It's going to cost $600 / kilowatt-hour. It's not going to be much better than that in the future."

But first-principles thinking will not heed the pundits' advice. Instead, you start asking fundamental questions. Musk continues:

What are the material constituents of the batteries? What is the spot market value of the material constituents? It has carbon, nickel, aluminum, and some polymers for separation, and a steel can. Break that down on a materials basis, if we bought that on a London Metal Exchange, what would each of these things cost?

Oh jeez, it's $80 / kilowatt-hour. Clearly, you need to think of clever ways to take those materials and combine them into the shape of a battery cell, and you can have batteries that are much cheaper than anyone realizes.

So when Richard Kauffman shows his slide on how battery cost will decline and affect REV, I contend we can delve deeper into fundamental reform. Change the way we obtain power. What is the real cost of our present system can't we invest more wisely?

The other concern in deep reform is the commitment of the government to the process. So in the tradition of us loosing the title after the reform of NYC's Tammany Hall to Chicago and from Chicago to CA's dysfunction. I wish to point out that we are back on top we have taken the baton from the cold hand of CA and are now number one, in legislative dysfunction.

I am talking about is corruption in the legislature. I feel like the kid who walked up to shoeless Joe Jackson pleading " say it ain't so" in the 1919 Chicago World Series corruption White Sox scandal..... say to an't so Shelly.

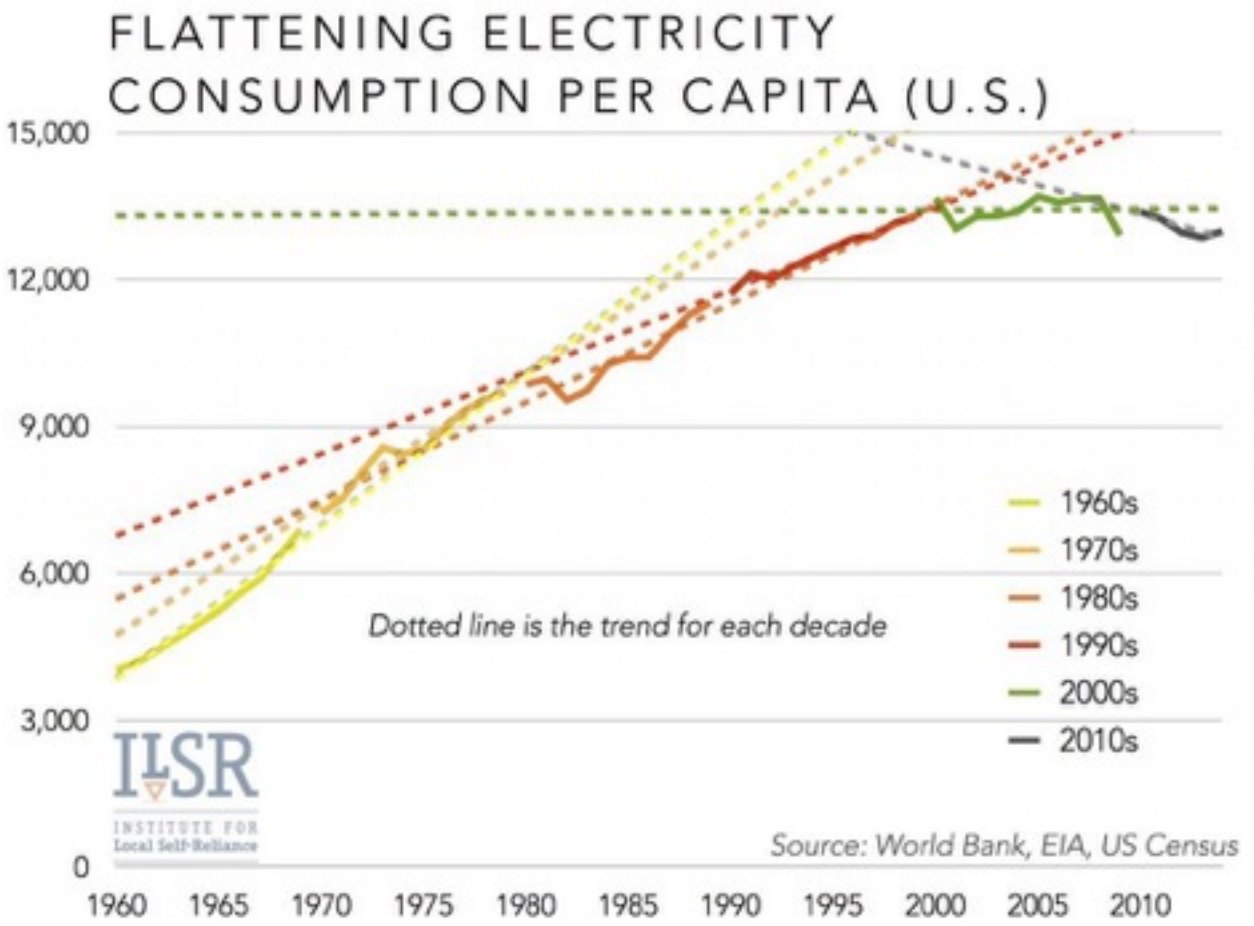
So besides the fact Albany was called "the place where good ideas went to die" and that the state was tilted towards Troy because, thanks to Joe Bruno, they were getting all the pork. Say it ain't so Joe!

The reason to also raise the Bruno Spector is that after leaving office in disgrace and suffering a conviction on the courts he has that stain reversed later, basically no finality and no one goes to jail. I am not prejudging Shelly but it looks bad. Similarly I am worried about the finality of reform in REV after seeing the failure of fundamental reforms of the retail ESCO's after a well thought out and timely attempt by the commission, it just looks bad.

Last baseball reference, stolen from Sunday's paper: Babe Ruth said to a critic in the press who questioned how was it possible that Ruth, making $80,000 that year, could actually be compensated at a higher level than President Herbert Hoover, who was

pulling down $75,000. Ruth told the skeptic, "I had a better year than he did." I hope the commission has a better year with REV, we all deserve the big bucks reform here.

What I am specifically asking is, without having a full time consumer advocate (which the state has dedicated funding for due to the fines against Constellation energy in our hands) without full time experts and legal staff who represents the public in this process,



will there actually be any fundamental reform?

Simply put there is woefully inadequate representation of the public in the actual nuts and bolts process of REV and every motivation of the existing powers that be (who can through millions available in staff time and outside expertise/ lobbying against REV) to thwart change and either delay or spin the process to their favor over the public good.

Say it ain't so governor?

Conclusions:

The present "Utility" model is a failure for consumers and the industry itself.

Utilities who have based their existence on the continued rise of electricity demand have seen their commodity rejected and their price gouging resented.
The demand curve flattened out for lots of reasons besides the bad economy. People are simply saving on energy and technology is making it easier to do so.

Despite of what utilities say to your face REV is something they are prepared to fight because it calls into the light of day the inefficient method we use now to produce power, the pollution that is needlessly killing NY residents , and unwarranted economic burden of the present system. Of course the people hurt worst in the present unsustainable process of distribution are the poor and the aged populations. They're the same groups that the Retail ESCO's have prayed on in their unceasing battle to scam consumers.

So what do we do about this situation? Thankfully REV has taken the first step to open up the process to the light of day and ask the simple question can't we do better? Congratulations, we are on the road to change but there are multiple roadblocks (as the commission has found out when they took on the ESCO's recently).

So as a step in really guaranteeing reform and a true REVolution in how we get our power, have a consumer advocate appointed staffed and at the table in the process. The money is already there from the fines collected because Constellation Energy gamed the system. Have that accomplished by the governor or possibly the commission because the legislature failed to act last year and with the looming corruption scandals happening there, nothing will occur this year otherwise. The Office of Utility Consumer Protection should be housed in the AGE's office but be a separate agency with its own staff and simply use the built in investigative and subpoena resources there to support its operations. This will make all the difference in seeing real reform accomplished, not just a watered down delayed process that effectively kicks the can down the road to the next administration.

Utilities have too much resources in place to easily game the system and overwhelm regulators. Since no one goes to jail is the law of the land the battle continues. Just one other big example. The smaller ones are too numerous to bother with. You'd think regulators and the public would remember how badly California was burned by Enron's electricity price manipulations, which cost each resident more than $1300 in higher energy bills, and would be eager to avoid a rerun.
But memories are short. As David Cay Johnston reported in an important story at Aljazeera, Energy Partners, a Goldman-linked investment group, looks set to repeat Enron's ploy on the East Coast, here's the short version. The key to energy price manipulation now is how tight the market is overall and how few participants bid at particular auctions.
Electricity is sold at what are called "clearing price auctions". The price set for all bidders is based on the highest price that still helps fill the overall order. In other words, if A bids $5 for 20 units of energy, and B bids $10 for 5 units, but the need at that point is for 45 units, higher bids will be treated as filling the order. In our example, we are only at 25 units out of 45 so far. So then order C for 15 units at $25 is waved in, and the final bid,

for 30 units at $50, is partially filled. The last bidder supplies only 5 units of the total, but his $50 bid is the clearing price, and everyone who bid lower also gets their offers filled at $50.
So if you reduce capacity (supply), all participants will tend to bid at higher prices because they know their odds of getting all or part of a bid are better than before. And a reduction in the number of bidders also makes it easier for the suppliers to collude informally. As Johnston explains:
Trading records and experiments conducted by Professor Sarosh Talukdar at Carnegie Mellon University and others show that the electricity auction rules tend to drive prices up, not down, until they approach the level that an unregulated monopolist could charge.
This occurs because suppliers learn to arrange their bids to ensure the highest price, a good example of how competition does not always favor customers or lower prices. While collusion among suppliers is illegal, learning how to jack up prices by studying bidding patterns is perfectly legal.
The original market rules, by the way, were drafted by a massive fraud posing as an electricity trading company named Enron.
Yes, sports fans, the “rules” that Enron devised so it could game energy markets are still in force!
So what, exactly, is the Energy Partners scheme? It bought three energy generating plants for $650 million. A mere five weeks after the deal closed, it said it needs to shutter Brayton Point, the second largest producer in New England, claiming it will cost the investors more than it’s worth to keep the plan running. Regulatory filings show that the electricity system in the region has gone from surplus to deficit, and baseline prices were already projected to double. Clearly, removing a major producer would lead to even greater price increases. The game continues! With Brayton Point closed, New England consumers and businesses will spend as much as $2.6 billion more per year for electricity. Who is the top cop and the clerk of the works to stop this cheating?

Why is the present system so bad and unworkable now besides being gamed.....? One reason is simply, it is too vulnerable. Too many critical nodes with no backup, no hardware in reserve if a massive attack happens and no possible way to protect points of attack to critical systems. Just this January in Switzerland Davos forum it was forcefully pointed out that attacks on power plants, telecommunications and financial systems, even things like turning all of Los Angeles' traffic lights green could bring society to its knees. Davos elites were warned of the terrifying possibilities of modern cyber terrorism. I just found out how the U.S. Shut the grid in Iraq, to easy to mention.

It can’t happen here? Well it already did the worst recent example is a rifle attack at a distance on a critical CA substation, only by luck did not bring down the grid there (the perpetrators still remain at large). What is there to do to stop the next one who attacks the system from a mile away? The April 16, 2013, assault on PG&E's Metcalf substation damaged 17 transformers, caused $15 million in damage and shook up the utility industry. This could have been carried out by one lone shooter according to the FBI. Jon Wellinghoff, chairman of the Federal Energy Regulatory Commission at the time, called the Metcalf shooting "the most significant incident of domestic terrorism involving the

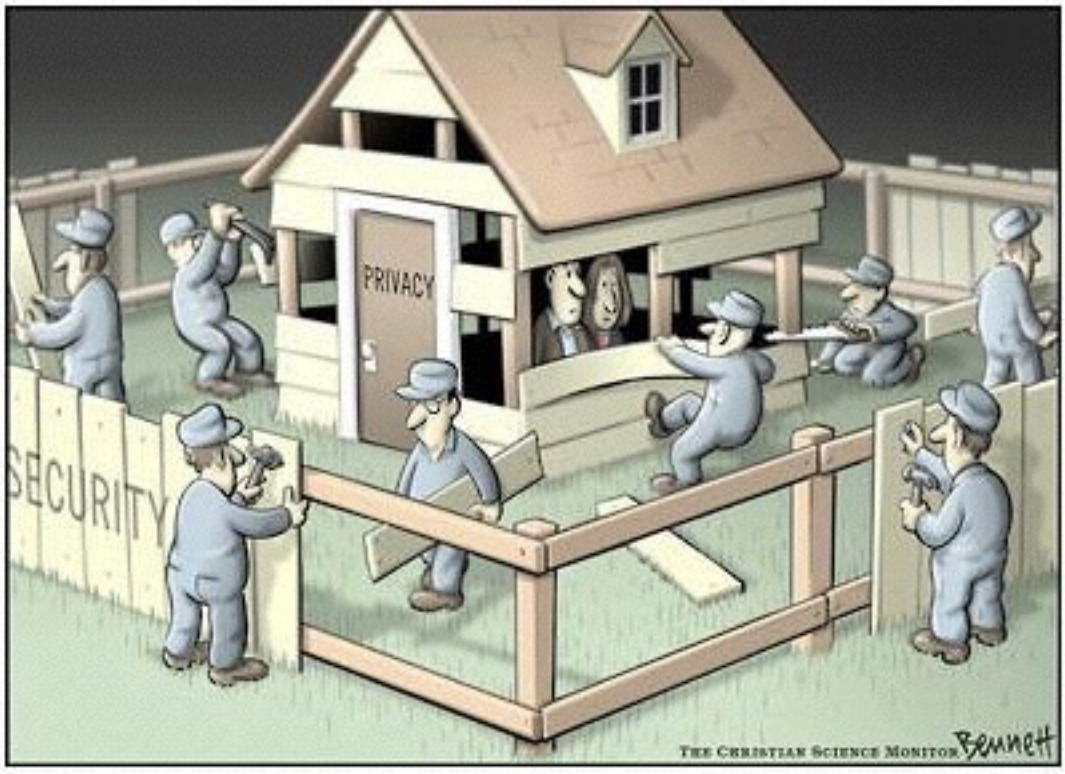
grid that has ever occurred." No arrests have been made in the case, despite PG&E's offer of a $250,000 reward for information leading to a conviction. The same substation was the target of theft recently when someone cut through the fence and stole saws, drills and other construction equipment. We can't even stop common theft how do we expect to be safe from terrorist's? "Here's the FBI's view: This does not fall in our definition of terrorism," the agent said, at the Power Grid Resilience Summit. The bureau, which is investigating the Metcalf incident, defines terrorism as the use or threat of force in violation of federal law to further a political or social agenda, he said. You can draw your own conclusions about that statement but in general we seem to be asleep at the switch?

Now we are in the new brave new world of cyber remote attacks by foreign powers as well as multiple terror organizations. Do we really care if the culprit is here or elsewhere if they take down the grid and cause chaos and billions of damage? The vast stretched out web of power transmission lines from power-plants just does not fit the needs of a secure society that relies on the critical commodity to keep it functioning and not be suddenly back in the stone age when someone pulls the plug. We had the same result with out terrorists due to multiple weather events in NY and the utilities were simply not up to the job to repair that mess, how would we expect another results in a terror incident especially if critical parts are simply not available?

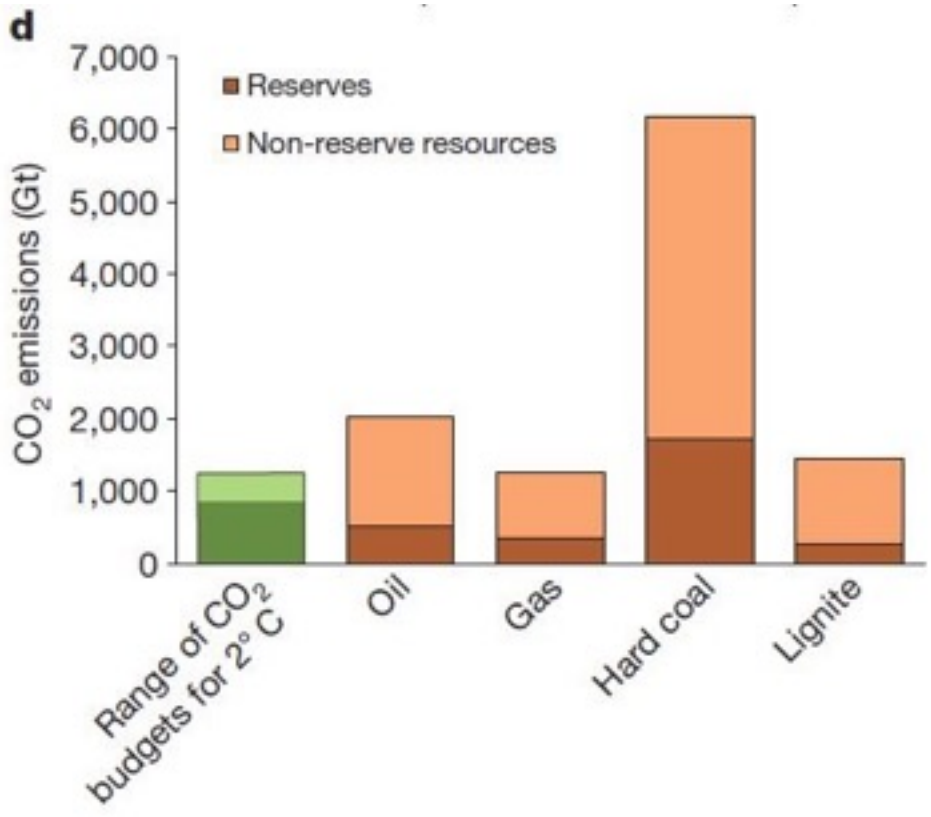
What I am saying in this rendition of terror and weather event doom, is simply that REV requires us to take a look at the big picture first. Do we want to be living held hostage to a system that is costly, too vulnerable, and inefficient? If not let’s attempt real reform from the bottom up not just a patch job making excuses for 19th century technology and methods which were outdated as proven 50 years ago by the great blackout on the east coast in September of 1965. We can take Steve Jobs challenge to “Think Different” use Aristotle’s *first-principles thinking* method to design the grid that fits todays and the futures needs now. Not just make excuses and throw billions more into “upgrading” technology and systems that were exactly the same as those in my grandfathers time.

Possible the most glaring example of the folly of continuing with the business as usual approach in maintaining the present production and distribution system and expect it to survive global warming stormageddon events as in Japan with Fukushima? Possibly this can be used as a hard lesson learned, relying on the grid and central power to have society survive the effects of large weather events or terrorism is foolish. We simply need DG and renewable energy, society doesn't need a dangerous fuel cycle to produce power and provide the safety net that the present grid can't guarantee in time of need. Fukushima has installed over 270 MW of local PV capacity since the disasters over 4 years. NY has only managed to install a meager 338MW since the beginning of

time across the entire state. Possibly we should change our priorities before the next



disaster hits here?



We can't hide behind a house of cards that has glaring holes just because we build a bigger “secure” fence, we have to build a system that is smart and fits the needs of the ratepayers not the monopolies that wish to preserve status quo. Or we could continue our folly "like tenant farmers chopping down the fence around our house for fuel" and expect to be safe behind our missing safety net?

Former FERC chairman John Wellinghoff makes the fence argument succinctly in a recent interview.

Q. So how do we protect these nodes?

W: Well, there is only so much you can do. We could physically protect these nodes by beefing up security around them, but they’ll never be totally safe from a physical or cyber attack. It is sort of like building a firewall to keep out hackers. Eventually, the hackers will figure out how to get through, forcing you to build a higher firewall. It never ends. What we need to do is to move toward from this kind of thinking.

Q. So what’s the solution here?

W: We need change the way the grid works, not just build higher and higher walls around these nodes. This can be done by shifting from a centralized to a distributed grid architecture in which power generation is dispersed along the grid.

Q. By that you mean distributed generation?

W: That’s right. Distributed generation.

Commissioner Wellinghoff believes the true answer to grid security is to fundamentally realign the system from one that relies on a few nodes (probably less than a dozen), which are all critical for the grid to operate, to a national system of ‘distributed grids’; hundreds of smaller ones, which of course could be attacked individually through conventional or nuclear or cyber means, but none of which could topple the entire system if it went down.

Another fundamental argument for immediate change is global warming.

A new study published in the journal Nature, researchers Christophe McGlade and Paul Elkins employ a single integrated assessment model that includes estimates of fossil fuel “resources” (defined as remaining ultimately recoverable resources) and “reserves” (defined as resources recoverable under current economic conditions) to determine what portion of coal, oil and natural gas can ultimately be utilized consistent with the objective of keeping temperature increases to 2C above pre-industrial levels.

There is a massive gap between both estimated fossil fuel resources (nearly 11,000 Gt CO2) and reserves (nearly 2,900) and the 1100 gigaton carbon dioxide budget that may be necessary to avoid passing critical temperature thresholds;

Under a scenario in which carbon capture and sequestration (CCS) is extensively deployed from 2025 onwards, over 430 billion barrels of oil and 95 trillion cubic meters of gas reserves would have to stay in the ground, translating in half of the oil in the Middle East, and a whopping 75% of Canada's oil reserves, with its large reserves of bitumen; 82% of coal reserves will need to remain unburned to not exceed the world's carbon budget by 2050, with the US and former Soviet Union availing themselves of less than 10% of their reserves.
Unconventional natural gas fares better, displacing coal in electric and industrial sectors, permitting 50 trillion cubic meters to be burned worldwide. However, by 2050, fully 80% of unconventional gas resources in China, India, Africa and the Middle East must remain unburned. The unanswered question under REV is do we recognize the world we are handing to the next generation and take definitive action before it is too late.....

There is no lack of plans and reasons to change this foolish reliance on outdated thinking and fuel sources. It's not like we won't have to spend money (30 billion) to support the Status Quo how about spending more wisely and getting positive returns?

A new report from the Political Economy Research Institute and the Center for American Progress (the "PERI-CAP" report) offers a plan to bring the United States in line with an international emissions-reduction goal: 40 percent reduction of carbon dioxide emissions from 2005 levels by 2035.

The report, by Robert Pollin, Heidi Garrett-Peltier, James Heintz and Bracken Hendricks, makes the following key points:
- The plan would require annual public and private investment of approximately $200 billion per year for the entire US.
– The government share of that expenditure would average $55 billion per year, which is within the range of clean energy investments already made in recent years.
– Total investment would be less than half that being spent by the oil and gas industry.
Of those annual investments, $90 billion would go toward raising the efficiency standards of buildings, transportation systems, and industrial equipment – investments that would result in lower operating costs as well as a 30 percent reduction in energy consumption from current levels. As the report explains, most of these investments will be paid off after an average of three years. After that there would be net financial gains.
The remaining $110 billion per year would go toward renewable energy sources with low or zero emissions, increasing U.S. energy production – and independence.
The report projects a net gain of 2.7 million jobs, at all income levels, for a decrease of 1.5 percent in the unemployment rate.

Guess what even the federal government wants to chime in?

The House Energy & Committee's majority Republicans just released a framework for a "comprehensive energy bill" they hope to pass this Congress. The package focused on four areas: modernizing infrastructure, a 21st century energy workforce, energy diplomacy and efficiency and accountability.

The committee plans to advance discussion drafts through the legislative process in the coming months and bring a comprehensive bill to the floor later this year.

"Our energy realities have changed dramatically. We've gone from bust to boom practically overnight," Chairman Fred Upton, R-Mich, and Energy & Power Subcommittee Chairman Ed Whitfield, R-Ky, said in prepared remarks. "Today's energy policies are lagging far behind and are better suited for the gas lines in the 1970s than this new era of abundance.

Much of the committee's outline released focused on the oil and gas industries, but the infrastructure section pointed to power, too. "We need policies that meet today's needs and are focused on the future, and that starts with building the architecture of abundance."

The electric industry is dealing with changing market dynamics, technological advances, aggressive environmental regulations, increased integration of intermittent resources and growing grid security threats.

Big data and new technologies offer new products and services that can improve efficiency while helping the industry and software firms meet consumer needs.

The committee's bill seeks to modernize the transmission, reliability and security of energy distribution by addressing permitting challenges for transmission lines (both domestic and cross-border). It also will look to protect critical infrastructure with better emergency coordination and information sharing, ensure robust and transparent energy markets and bring added levels of accountability to decision makers.

The bill will also build on work from the last Congress to improve efficiency for households, businesses and the federal government. That will include setting up voluntary programs, guidelines and improved data sharing and benchmarking.

In separate legislation, the committee plans to address the "regulatory overreach" of the EPA including its Clean Power Plan to cut CO2 emissions and recent ozone proposal, the outline said. *Another way of saying kill reform to favor big oil-talk about looking bad?*

Ranking Member Frank Pallone, D-NJ, and Energy & Power Subcommittee Ranking Member Bobby Rush, D-Ill, issued a statement saying they agreed that the energy industry was undergoing major changes.

"While the inclusion of a few provisions that garnered bipartisan support last Congress is encouraging, that is no substitute for sitting down at the outset to draft legislation acceptable to a broad range of members on both sides," the Democrats added. "We hope that Chairman Upton and Whitfield will work in a truly bipartisan fashion with all members of the Energy & Commerce Committee to draft comprehensive energy legislation through regular order."

Good luck with that happening the REVolution is definitely at the state level. Wether we like it or not it's our job to lead the nation in reform as well as a vision for a viable future.

There is a battle between the regulated and regulator with the public interest hanging in the balance. Utilities have continually used (typically false) PR arguments to win their way over ratepayer interests in needed reforms and technology innovation. False arguments like "paying their fair share" and "hurting the poor" catch phrases have been trotted out with stealth front group utility funded campaigns to kill net metering for example. The commission has to simply fight back with the facts and serve the ratepayer over special interests when this happens. This is where a key ally like a independent utility public advocate for consumers interest can be invaluable.

They can point out things like:
While there is no cost shift, PV actually is a gift to utilities and a $ plus on the grid but, utilities do face a revenue shift as more people go solar. This revenue shift, while of some understandable concern for utilities, is relatively minor - especially in the face of the urgency with which renewable energy must be deployed to slow CO2 emissions. Based on a 2014 study by consulting firm Accenture, in a likely scenario in which both distributed solar and everyday energy efficiency efforts continue to grow in popularity, utilities would face a resulting revenue loss of less than 3% through 2025.

The regulated utility was borne out of a public compact -- utilities invest in building infrastructure to serve the public, and regulators ensure that utilities earn a reasonable (but not excessive) rate of return on those investments. Today, utility rate of return on equity is often ten percent. Most of the modern utility's profit comes from building transmission and distribution projects, and the utility's profit incentive is to essentially build more forever, with little inherent incentive to become more efficient. This focus on building more, in order to recover more, directly conflicts with the public interest in a more affordable system.

The imbalance of information between regulated firms and regulators can be balanced with market forces and consumer advocates.

In October 2014 economist Jean Tirole was awarded the Nobel Prize for his work on regulated monopolies. Tirole found that "the regulatory authority lacks information about the firms' costs and the quality of the goods and services they deliver. This lack of knowledge often provides regulated firms with a natural advantage."
With regulators therefore at a disadvantage, how can they effectively control prices, and make decisions that are in the public interest? One option is to embrace competition as the countervailing force against asymmetric information. Community Choice Aggregation (CCA) is one simple tool that also restores balance. The revenue shift caused by solar PV should also motivate utilities to lower rates, not to raise them. Regulators could open up grid services to competitive markets to motivate utilities to seek out lowest-cost options and adopt innovative technology.

The savings are obvious and apparent in NY. Rather than build a new substation at a cost of $1 billion, New York City-based utility Con Ed plans to invest in demand-side management programs (distributed solar generation) and substation upgrades to reduce its load by 52 megawatts by 2018, at significantly lower cost to ratepayers. This shift occurred at the insistence of ratepayer advocates and because of a opening of the process by the PSC.

The commission is In the unenviable position of being being top cop, hostage negotiator and judge for a system that has seen its better days. The utilities need to be shown the light before it's too late.

The cultural shift now underway is being demonstrated in many places. Writing recently in the Wall Street Journal, Rebecca Smith noted the financial impact of energy efficiency and alternative energy on the nation's electrical infrastructure:

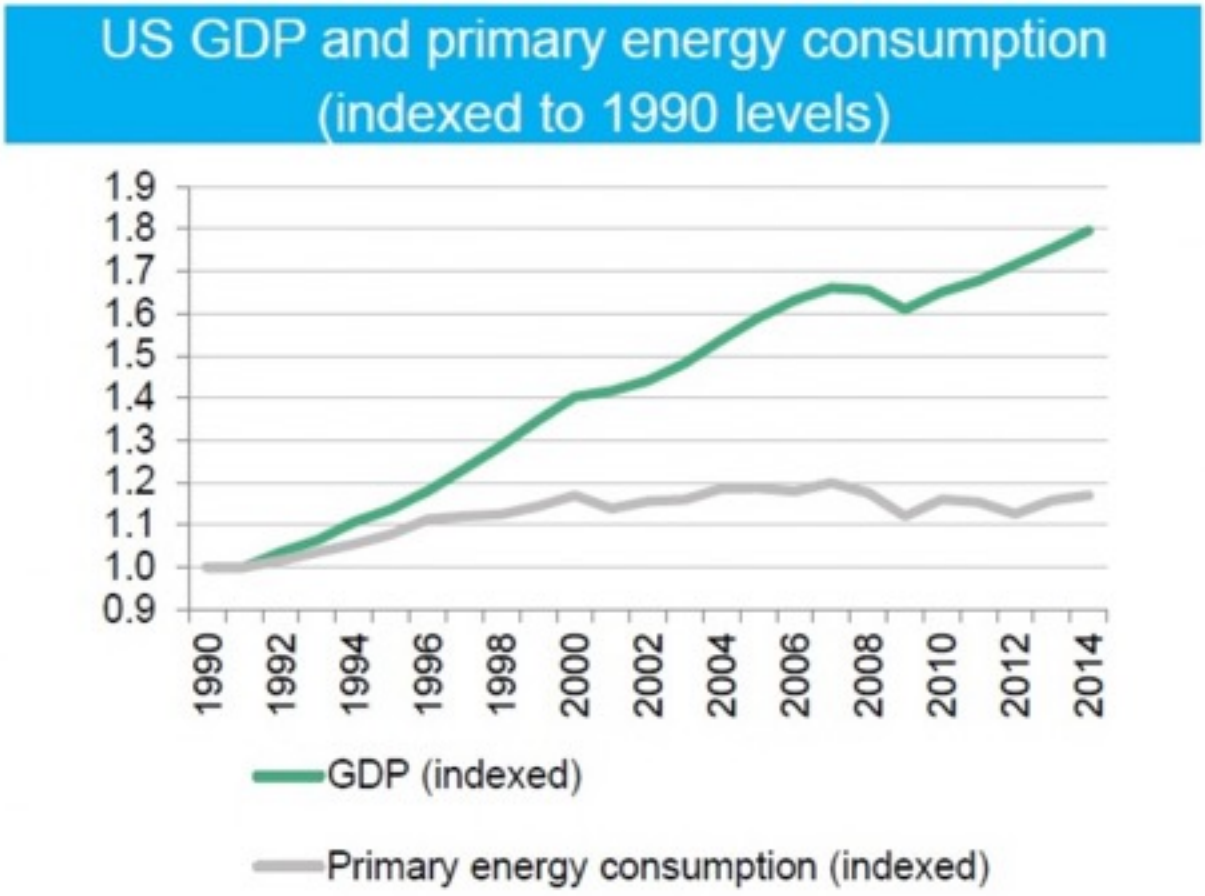
The long-term future of the nation's electric grid is under threat from an unlikely source--energy-conserving Americans. That is the fear of some utility experts who say that as Americans use less power, electric companies won't have the revenue needed to maintain sprawling networks of high-voltage lines and generating plants. And if the companies raise rates too high to make up for declining sales volumes, customers will embrace even more energy-saving gizmos and solar panels, pushing down demand for grid power. The Edison Electric Institute, the trade group for investor-owned utilities, has warned that they could face a "death spiral."

In order to develop a realistic and workable business plan, electric utilities need to analyze and understand the drive toward a sustainable economy. The commission need to make clear that this trend is going to continue. The grid will always be needed, but its monopoly on electric power has come to an end.....none too soon.

Remember this is NY where the electrical revolution began in NYC at Thomas Edison’s, worlds first Utility Power plant also in Newburgh NY with his second power station and electrical grid. We created AC electrical power from Niagara Falls and lit up the worlds fair far away in Chicago showing millions the greatness of NY’s electrical system and the miracle of our innovation. We can still do this type of world changing innovation and create the second clean efficient miracle the clean energy REVolution here too.

Our nations health and economy is not based on consuming more energy but on being smarter and conserving our dollars and environment in the process. I hope that is what REV turns out to be, the realization that we can have continuous wealth only by providing a path to the future not following a failed model based on 1800's ideas.

The numbers prove that point and honest reform is needed now to save all concerned parties.


US GDP and primary energy consumption (indexed to 1990 levels)
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
GDP (indexed)
Primary energy consumption (indexed)