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ERCOT 3.0: Let's get on with it!

I've been a regulator here in Texas and for the nation, and in the two decades since, I've been in the power business -- both on generation side and the poles and wires side. I've been blessed to share that journey with many of you.

From that unique perch, I just gotta say it loud and clear: since Uri, we're too much talk and not enough cattle. The fundamental fact is: have told the world that Texas is "open for business." Everyone in this room believes it, and the world is responding. Companies are moving here in droves. People are flooding the State from both coasts.

But the fundamental problem is this: we've said we're open for business, but we haven't stocked the shelves. If my Dad running Pat Wood Drug Store in Port Arthur had told everyone he was open for business but didn't have enough inventory, wasn't sure of the pricing, and might change his mind throughout the day, his business and his reputation would have cratered. We are doing the same thing. We've invited Gigawatts of new business and residential demand to come to our store, but we are woefully short on serving them. If we don't jump ahead of this, we Texans run the risk of going from the envy of the world to just another place that overpromised and underdelivered.

- We must have enough supply to meet exploding load growth, with price signals to support new investment.
- We must expand and encourage load participation and energy efficiency in new and creative ways.
- We must rebuild and enable a robust grid to unlock diverse generation and load resources.

- And -- we must do this work efficiently and fast the good ol' way -- fundamental policy decisions are made by the Legislature and Commission, then ERCOT and the stakeholders come together to work the details with enlightened self-interest AND public interest.

I've been in energy over 30 years, and nothing has made a deeper impact on me than Winter Storm Uri. Not the 2003 North American Northeast Blackout, the California energy crisis, the fall of Enron, the advent of fracking, the Arab oil embargo, Katrina/Rita hurricanes. Because of Uri, hundreds of Texans died and statewide economic losses exceeded \$100 billion. It was bad.

We have taken some quick and thoughtful actions to both address the crisis and prepare for a very different future. But here we are three years later, and we still have more yet to do.

So, I want to use my time here today to build on what we have heard on at the conference yesterday and this morning and flesh out ERCOT 3.0, our path to get there. A lot of you in this room today were integral in creating ERCOT 1.0 and 2.0. Thank you for your role in the single biggest engine driving the "Texas miracle."

ERCOT 1.0: 1995's S.B. 373, wholesale generation competition, broadening ERCOT's role to a one-stop shop, postage stamp transmission cost allocation, straightforward generation interconnection process, the beginning of the 30+ GW slug of new gas power and wind development.

ERCOT 2.0: 1999's S.B. 7, single control area & Security-Constrained Economic Dispatch, large utility unbundling, proliferation of independent retailers, retail competition, zonal then nodal-priced Real Time and Day Ahead markets, CREZ and the first real ERCOT-wide transmission plan, blowing past two statutory renewable targets to become the first post-RPS state, increasing retail market innovation, then --- the Groundhog Day 2011 rolling outages, followed by a capacity market debate that yielded ORDC, solar and power storage replacing coal at scale.

And then came Uri. We paid a heavy price for ignoring the 2011 wake-up call. Texans died because we were sloppy and lazy with the infrastructure we have, and we were not planning for the infrastructure we need.

But we are moving now – we’ve taken the key step of winterizing power plants, and dragging the gas industry into winterizing that critical network, too.

Here's what we haven't done. While we put taxpayer money into the Texas Energy Fund to encourage dispatchable generation to build here, we haven't addressed the price signals all investors need to build it without a subsidy. We haven't given investors confidence that the rules their business cases are built upon will be there when their assets go live. And we haven't given the market breathing room to fix itself – high prices are the cure for high prices, if we don't threaten market intervention every time we see them.

We haven't adopted a wartime level sense of urgency to get every possible project online NOW to meet our exploding load growth. We must root out the inefficiencies and lengthening timelines of our resource interconnection processes. We must continually upgrade the grid to support all the new projects and deliver reliably to load. Trucks and cranes from the Red River to the Rio Grande.

At the same time that Texas load growth is exploding, we haven't confronted that challenge head-on by optimizing flexible load and using every tool to limit, shift and manage demand. Uncompensated public conservation calls are no substitute for a market design that rewards reliability-supporting customer behavior, and for aggressive energy efficiency programs targeting peak demand for everyone else.

We haven't directly addressed the utilities' infrastructure and rules to unlock behind-the-meter and non-utility resources like solar, batteries, backup generation, demand response and virtual power plants – even though these are huge sources of resilience that are already here.

We did ERCOT 1.0 and ERCOT 2.0 each in about three years. Uri was more than three years ago, so we're late. Here's my take on the agenda to get on with it in ERCOT 3.0. I'll group those thoughts under the Six D's of Future Power.

1. Power will be Decarbonized:

It is ironic that the Energy Transition to lower greenhouse gas emissions is happening fastest in the one State that is almost embarrassed to talk about it. That's fine, because talk is cheap. Thanks to the Texas-friendly welcome mat we threw out a generation ago, and the Good Lord's gift of so many rich energy sources both above and below our land, Texas is crushing the Energy Transition. We're the #1 state in natural gas production. We are #1 in wind and #2 in solar power generation. Geothermal will join the fray in the coming years, and we're planning for nuclear to make a comeback. But at the end of the day, Texas power and Texas air will become cleaner because it is cheaper; and Texas power will cost less because it is cleaner. God is indeed good, and so are competitive markets.

Last week, ERCOT was 80 percent carbon-free for several afternoons in a row. Getting to where 80 percent of our annual use comes from renewables and nuclear would be a home run; with the other 20 percent being the dispatchable and demand response-centered tentpoles that keep electricity dependable through the stress periods throughout the year. If a gas-fired power plant that used to run half of the hours in the year will instead run 20 percent of the time, we still need it, and we need to pay for it to be ready anytime. Decarbonization need not come at the expense of dependability. Let's put that extra Texas gas on a boat and save Europe from the Russian bear.

The CREZ transmission expansion remains a global model, and ERCOT's management of high levels of intermittent resources has been a well-earned feather in its cap. But robust, forward-looking regional transmission planning is still in its infancy. ERCOT doesn't need the Legislature to tell them to plan for the Permian area (although it's nice to have the nudge); statewide advance grid planning is already their job. And we are still doing too much "security constraining" of economic dispatch on our grid because the resources – and the load – are trying to come in so fast.

Decarbonization also happens when we focus on the power that is never consumed. When we invest in demand response and targeted energy efficiency, we reduce risks of shortfalls, increase operational flexibility, lower customers' energy bills, and protect Texan lives against future outages and weather events.

Unlike the early years of restructuring when we had numerous models from around the world to borrow from in our market setup, Texas is at the vanguard of this Energy Transition. Not California. Not Europe. But Texas. We will be building the template for the rest of the world to follow, and that is a mantle we should proudly bear.

2. The second D of Future Power -- Power will be Digitalized:

I am a member of the National Renewable Energy Labs' External Advisory Board, so I get to see a lot of what's cooking in the kitchen. The digitalization of our energy grid is here.

To accommodate all these changes, a modernized grid infrastructure is essential, from the busbar to customer meter. To date much of Texas grid modernization is happening on the transmission side. However, this revitalized grid cannot simply depend on the outdated management systems of past decades. Modern grid management must integrate technologies in data analytics, cybersecurity, and automation to effectively manage fluctuating loads. It must swiftly incorporate new generation, and allow for load control technologies. I've heard Pablo and prior CEOs acknowledge that ERCOT is fundamentally an IT enterprise. We are counting on ERCOT to be a rock star in this role. We also need to map out how the grid management systems of future distribution system operators will develop.

I understand the trepidation surrounding areas such as cloud computing, cybersecurity and artificial intelligence for critical infrastructure like our energy grid. However, we cannot afford to say no to these new technologies. Instead, we must collaborate with experts and stakeholders to figure out how to make these work, to bolster the security of our grid while streamlining technology procurement and saving money. This effort marries the two keenest interests I hear from the younger workforce: technology and energy. What a great opportunity to inspire a new generation of talent to join our ranks.

The US Department of Energy and national laboratories are already investing in and seeking participants for digitalization projects. Texas utilities and stakeholders should join us in this effort, to learn and lead on digitalization as we will on decarbonization.

3. Power will be Democratized:

The democratization of power parallels those efforts taking place elsewhere in our society, as a generation of smart and technology-friendly customers are questioning the old way of doing things and pushing their way into the front seat. Whether it's through on-site power generation and storage, smart appliances, home management systems, or EVs, individual customers demand more involvement and control in their energy options and use.

We need to respect customers enough to provide tools to manage their energy use. This includes everything from access to innovative retail electric providers, well-designed time-of-use delivery rates, automated energy use controls, and compensation for demand response that supports grid reliability. And "demand response" is an expansive term: I'm talking about direct customer participation – whether through demand curtailment, internal use of on-site generation or export of excess generation for the benefit of the grid.

Engaged customers should be part of the solution rather than just a "ratepayer" or a "load" to be managed. Today customers can't get real time price signals because of a ban on wholesale-indexed retail power plans. To see the quickest gains in demand response, this must go; please come back Griddy, but bring guardrails! Unless customers get market signals about costs, they won't act in economically-rational ways that support reliability. So, our policy should actively promote customer price signals everywhere we can, and use robust Energy Efficiency programs where we can't.

By that I'm talking about the provision in 1999's S.B. 7 empowering our regulated utilities to use dedicated ratepayer funds to operate a variety of energy efficiency programs for all classes of customers.

But that small charge has hardly budged in a generation. Through the regulated wires charges included in my monthly REP power bill, I pay my local utility here in Houston almost 3x as much for "temporary" mobile generation that might be needed once a decade as I do for widespread energy efficiency programs that would reduce inefficient consumption EVERY SINGLE DAY.

So, as a resource adequacy measure, we should expand and refocus our regulated utilities' energy efficiency funds on peak reduction and demand flexibility, better yet channeling those funds, with strings, to the REPs who actually wear the risk of their customers' demand shapes.

This is particularly so for residential electric heating, which is now how 62% of Texas homes are heated, and which was consuming 35GW of the 70GW of ERCOT demand when we started rolling outages on the cold winter night of February 15, 2021. That's half.

Closing on democratization, Lubbock recently voted to give its citizens the freedom to select their own energy uses and suppliers, as it joined ERCOT. Hopefully others will follow suit so we have a seamless open marketplace across the whole state. This is a good thing for liberty, and it's also for the grid. We've already seen how getting utilities out of competitive businesses gets them laser-focused on evolving to the high-quality, secure platform the future requires.

4. Power will be Dependable:

In setting up ERCOT 1.0 and 2.0, we (humbly) looked all around the world for the best ideas on power market design and operation, and we borrowed heavily. Our energy market worked for years because we had lots of existing generation, slow load growth, and the exuberant overbuild of new generation at the onset of market opening. Generation investors have borne the risk of this excess capacity. We didn't have to worry about making sure we had enough power; it was just there. The 2011 rolling outages sent us a warning this was an issue, and then Uri knocked us over.

Today we know better. Every month a new study warns of future supply shortfalls relative to our expanding demand. Throughout my career, U.S. power demand has been basically flat. But with skyrocketing increases in electricity use – data/AI, EVs, population growth, return of industry to the US, electrified heat, more extreme weather events -- those flat growth days are over. Texas' peak grew 8 percent last year and 7 percent the year before. The rocket has launched. Whether U.S. load grows as predicted by 1.5x or 3x by 2050, it is outside the realm of anything we have ever lived through, and we must be ready.

The last two Legislatures mandated improvements to our market to improve reliability. We have made adjustments to the ancillary services ERCOT procures on behalf of all to address short-term operational issues. These will change quite a bit with the switchover to Real Time Co-optimization in 2026.

As an ancillary service provider at Hunt Energy Network, I know that when RTC makes ancillary service procurement more efficient, we will earn lower revenues. But it is the right thing to do for the customers and the market, and ERCOT should continue to prioritize this important work and get the details right.

However, we must also acknowledge that once RTC is implemented, it will lower returns for long-term supply investments under ERCOT's current market measures.

While the ERCOT market is handling short-term operational issues well, we have not done what we need to do on long-term resource adequacy, called "reliability services" in the statute. We at HEN have proposed implementing the Legislative 2021 mandate on Dispatchable Power and the 2023 mandate for Dispatchable Reliability Reserve Service (DRRS) to directly tackle the longer-term reliability challenge. That is the clearest reading of clearly-written statutes.

Get that investment price signal out there now with clear, fixed procurement quantities and multi-year procurement horizons, to address the cold winter night problem (which every study says that, if solved, will more than handle any future summer issue).

Our DRRS proposal to incent long duration resource additions would define it as an offline resource, with 24-hour duration in the winter/4 hours in the summer, with a demand curve and a procurement level that would decrease as the reliability standard is satisfied over time.

5. Our final two Ds of the Future of Power: Power will be Decentralized and Diversified:

Like so much else in our society, power is decentralizing and diversifying. With smarter appliances, rooftop and community solar, batteries in garages and cars, and dispersed backup generation at homes/businesses/industrial plants, we need

to turn a distribution system designed to be a one-way street into a transparent, multi-flow low-voltage grid. The past century's system of large central station power plants and the large grids is being buttressed by networks of smaller grids, with thousands of resources of varying technologies under diverse ownership and control. The upcoming TDSP resiliency proceedings are the ideal forum for the Commission, utilities and stakeholders to map out the future of this robust distribution infrastructure.

At the same time, we need to take the operational and policy lessons learned over the past generation on the ERCOT transmission grid and bring them all the way to the customer meter. The most efficient model would have ERCOT managing all of this, but that is one helluva large IT project. Other markets are looking at Distribution ISOs, which here would coordinate with ERCOT, or, when we have completely independent wires companies (no generation or retail), they could do it. In any of these models, we need a uniform Texas tariff that standardizes everything: a simplified interconnection processes, timelines, CIAC charges, data set protocols, transparency of market and real-time operating information, settlements.

I have firsthand experience in the present non-standardized process when it comes to interconnections at the distribution level for energy storage. Our company works in every region of ERCOT, and we have seen firsthand that every TDSP, muni, and coop has their own interconnection processes, procedures, and costs at the distribution level. It is truly the Wild West.

Our Texas regulatory structure has allowed for swift entry on the transmission grid because we "connect first and manage after," and we handle the financial issues of new entry and power delivery in a straightforward way. Our clarion Texas policy, from 1998, has been "loads pay, and pay only once." No generator, no marketer, and no transmission battery is assessed any charges for moving power to customers. All the regulated costs of power delivery are assessed, once, to the end-use customer. And that's it. Elegant.... except for batteries connected at distribution. Some utilities are recovering delivery costs of power flowing through distribution batteries twice: once from the battery owner and again from end-use customers. That puts distribution batteries at a competitive disadvantage. We are asking the PUC to adopt a uniform policy for all resources, and roll that welcome mat all the way to the customer meter.

In bringing our past ERCOT successes all the way to the meter, we can unlock the last treasure chest: the resources behind the meter. Having genuine, robust demand participation in energy markets; tapping all of the unused or underused generation and storage; paying their owners for the resiliency they contribute to the overall system. Those Gigawatts are here today; we don't need to wait for a two-year ERCOT study to interconnect them. Let's grab them NOW.

We have seen repeatedly that power systems with diverse technologies, fuels, costs and locations are more reliable, resilient and affordable than those that aren't. At a time when ERCOT needs every available electron, I would urge our policymakers in Austin to bring order to chaos, level the playing field, keep Texas customer-friendly, tech-friendly and investor-friendly.

My old boss's dad liked to talk about the "thousand points of light" during his Presidency. In light of Uri, I envision our Texas power grid being not one that can fail catastrophically from the center, but one that remains redundantly resilient from all of the overlapping, strong, small regions of light, in every corner of Texas, knitted together with the big grid, supporting each other.

To close, we still have a lot to do, folks, and Texas' depends on this industry -- on us -- for the Texas miracle to continue on. Texas will be on a knife's edge for the next several years as load continues to explode. We must do everything in the playbook -- and more -- to roll out the welcome mat and flip the ON switch for every kind of resource. We have lost time playing tug-of-war and finger-pointing.

Let us instead consciously return to the posture that served us well in ERCOT 1.0 and ERCOT 2.0: as we simultaneously pursue both enlightened self-interest AND the public interest, we will ask ourselves, "how can we improve the system to make sure that everyone wins -- customers, providers and investors?"

To paraphrase my old boss, we want no electron left behind.

Let's get back to work.