

---

**INFORMAL STAFF REPORT  
TO MAYOR AND CITY COUNCIL**

**SUBJECT:**

Data Center Project – Additional Requested Information by City Council

**DISCUSSION:**

In response to questions posed by Council Members relative to the proposed data center proposal that will be considered by Council on August 17, DME offers the following answers and comments. Staff requested specific information needed to fully inform Council in preparation of a decision regarding the potential data center project. The following items were requested by Council during the work session on September 3, 2021 and in subsequent emails.

Council Member Armintor Requested Information

Q1. The fact that the proposed project is subject to a Non-Disclosure Agreement (NDA) make me uncomfortable.

Staff Response: Potential transactions of the nature of the proposed type are typically pursued by private companies under NDAs or Confidentiality Agreements in order to protect the sites under consideration from competitors and to keep the specifics out of the market to avoid equipment suppliers to run the price up on needed equipment that may be in short supply. Broadcasting the name of the customer to the market, has the real potential to erode their competitive position and consequently cancelation or a decision to pursue the project in another location. Council Members and City employees are bound by the terms of the NDA which can have adverse financial impacts to the City if violated. Council delegated authority to the City Manager to enter into NDAs deemed commercially prudent in the last two years with the condition that all such NDAs must be periodically reported to Council. Council Members may obtain specific information on the identity of the potential owners and operators of the proposed data center but must comply with the terms and conditions of the NDA. Nevertheless, staff universally investigates the financial integrity of the customer to ensure their ability to perform as the level of staff time required to complete complex transactions of this type can be significant. Staff is always thoughtful of spending customer/owner expense dollars on projects that have high potential to close and that will be profitable to the City. The name of the company will be disclosed in conjunction with the agenda posting for August 17.

Q2. It would help in debating the value of this deal if I understood more of the differences between traditional data centers and the proposed cryptocurrency mining operation proposed.

Staff Response: Data centers are classified in Tiers with a Tier 4 data center being the most reliable and Tier 0 the most flexible and designed to be interrupted for a variety of reasons. While not wildly different from a reliability perspective, Tiers 1 through 4 perform vastly

---

different operations. Classification of rated operational reliability of these classes of data centers are as follows:

- **Tier 0** - No availability Guarantee
- **Tier 1** – 99.671% Guaranteed availability
- **Tier 2** – 99.741% Guaranteed availability
- **Tier 3** – 99.982% Guaranteed availability
- **Tier 4** – 99.995% Guaranteed availability

Tiers 1-4 are considered “fault tolerant” as they are performing operations consistently such as mission critical servers. Tier 4 is considered an enterprise-level service. Tier 4 has approximately twice the site infrastructure of a Tier 3 location.

Tier 4 data centers ensure the safety of data processing regardless of any mechanical failures. They have backup systems for cooling, power, data storage, and network links. Data Center Security is compartmentalized with biometric access controls. Full fault tolerance keeps any problems from ever slowing down data processing. This tier also ensures optimized efficiency drastically extending the life of hardware.

Tier 3 has most of the features of a Tier 4 infrastructure without some of the elite protections.

Tiers 1 and 2 step down from these higher level of reliability by reduced levels of redundancies. Typically, these facilities host servers used by start-up companies and those that do not require maximum reliability.

The proposed “Tier 0” facility proposed for the property at the Denton Energy Center (DEC) is fully interruptible and does not include any redundant or back-up power supply. Cooling of computing equipment is performed by fans rather than with mechanical air conditioning equipment. Consequently, the footprint of the facility per teraflop of data processing capacity is less than 50% of a Tier 1 facility and less than 25% of a Tier 4 facility. The Tier 0 facility will not include any on-site natural gas or diesel back-up generating and virtually no regulated chemicals of storage such as ammonia for R13 coolant. As previously discussed with Council, the proposed Tier 0 facility will provide much needed ancillary service products to the ERCOT grid that will improve reliability of the grid. Alternatively, Tier 1 through 4 data centers consume ancillary services and have no capacity to curtail or interrupt their operations during power supply scarcity episodes.

Q3. The representation that a 3% electric rate increase is a condition to the approval of the transaction seems like an ultimatum.

---

**Staff Response:** Staff's presentation was not intended to be viewed as an ultimatum. Rather the 3% increase was provided to Council to demonstrate the magnitude of what a rate increase would have to be to fully recover the annual debt cost associated with winter storm Uri. All rate decisions are the purview of the City Council. The nexus between the potential incremental net income that could be provided by the proposed data center to DME and its potential to provide the incremental revenues to offset what would otherwise be a 3% increase in residential rates to cover DME's revenue requirements is the reason for its inclusion in the presentation. Staff has been clear in its intent to not discuss electric rate impacts until November/December of 2021 once summer revenues have been realized and further information is available on pending transmission cost of service rate case that is currently under development. Also, Council's decision on whether to approve the proposed data center will be decided and a more detailed forecast of electric revenues from the project will be fully developed.

Q4. The use of Renewable Energy Credits (RECs) to "green" the proposed data center is suspect.

**Staff Response:** All Texas load serving entities and companies with renewable energy targets or mandates use RECs to measure compliance because it is the only way to universally verify renewable energy generation. The market protocols in place require ERCOT to award RECs to renewable generators based upon actual metered output from qualified renewable energy resources. Awarded RECs are deposited into the renewable resource's REC account. Power Purchase Agreements (PPAs) between renewable resource and load serving entities like DME require the transfer of such RECS from the renewable resource account to DME's account.

RECs are only awarded by ERCOT if a MWh of renewable energy is generated. Each REC is serialized to denote the year, month and renewable resources from which it was generated. Thus, RECs provided by the data center to DME will use the same verification process as those DME receives from its renewable PPAs. Because of the short-term nature of the proposed PPA with the data center, renewable energy resource owners and developers will not enter into a traditional PPA and thus the need to rely on RECs for demonstrating compliance with Denton's requirement for 100% renewable energy. Since all RECs represent a MWh of energy that was generated by a renewable resource and the award of the REC is by ERCOT who administrates the REC accounts of all market participants, all RECs are of the same quality and represent a MWh of carbon free energy that was injected into the market.

#### Council Member Beck Questions

The following email thread was provided to Council Members.

**From:** Beck, Brian <[Brian.Beck@cityofdenton.com](mailto:Brian.Beck@cityofdenton.com)>

**Sent:** Tuesday, August 10, 2021 12:39 PM

---

**To:** Naulty, Terry <[Terrance.Naulty@cityofdenton.com](mailto:Terrance.Naulty@cityofdenton.com)>  
**Cc:** Puente, Antonio <[Antonio.Puente@cityofdenton.com](mailto:Antonio.Puente@cityofdenton.com)>; CMO Group  
<[CMOGroup@cityofdenton.com](mailto:CMOGroup@cityofdenton.com)>  
**Subject:** Re: Spot market relationship with Data center question

Terry:

I encourage you to present these answers today or perhaps in an ISR/Friday-Report to council, though many have already found their way into your presentation for today.

I keep hearing similar questions out in the community. Particularly the expected source of the RECs and the quality of the RECs that Stephen presented.

Also, you've shown us these before, but could you please have the current and projected MW values ready to go please? e.g. (min/mean/max) of Denton, Datacenter, Denton + Datacenter, %increase. (you may be able to cut-n-paste, but I couldn't find them all when I searched through previous documents)

Staff Response: **The volume of energy and the size of the phased development is restricted pursuant to the non-disclosure agreement between the City and the customer. This information can be provided to Council in a Legal Status Report or during a closed session discussion.**

If there's not enough time today, I understand, but could you then add that to an ISR/Friday/(LSR as required) response instead?

Thanks!

-Brian

Brian W. Beck, Ph.D

| Councilor for Denton – District 2 | Denton, TX, USA, 76201 | V:940-293-7611 | Facebook:  
@BrianBeckforDenton | Twitter: @beckfordenton | [brian.beck@cityofdenton.com](mailto:brian.beck@cityofdenton.com) |  
[www.cityofdenton.com](http://www.cityofdenton.com)

**From:** "Naulty, Terry" <[Terrance.Naulty@cityofdenton.com](mailto:Terrance.Naulty@cityofdenton.com)>  
**Date:** Thursday, August 5, 2021 at 3:29 PM  
**To:** Brian Beck <[Brian.Beck@cityofdenton.com](mailto:Brian.Beck@cityofdenton.com)>  
**Cc:** CMO Group <[CMOGroup@cityofdenton.com](mailto:CMOGroup@cityofdenton.com)>, Antonio Puente  
<[Antonio.Puente@cityofdenton.com](mailto:Antonio.Puente@cityofdenton.com)>  
**Subject:** RE: Spot market relationship with Data center question

My answers to your question below. Happy to expand upon them if need be.

Terry

**From:** Beck, Brian <[Brian.Beck@cityofdenton.com](mailto:Brian.Beck@cityofdenton.com)>

**Sent:** Thursday, August 5, 2021 10:53 AM

**To:** Naulty, Terry <[Terrance.Naulty@cityofdenton.com](mailto:Terrance.Naulty@cityofdenton.com)>

**Cc:** CMO Group <[CMOGroup@cityofdenton.com](mailto:CMOGroup@cityofdenton.com)>; Puente, Antonio <[Antonio.Puente@cityofdenton.com](mailto:Antonio.Puente@cityofdenton.com)>

**Subject:** Spot market relationship with Data center question

Terry:

Can you flesh out:

- the two-way interactions between ancillary services credits to the data center during high load and peak load events? Ancillary services (AS) markets clear on a day-ahead basis and thus must be committed by the project by 10 AM the day prior to delivery. The project will be assessing the relative economics of selling ancillaries versus producing their product and me making those decisions based upon weather, renewable production forecast, natural gas prices, projected demands, et., just like DME does every day. The amount of project offered ancillary services project that clears the market on a day-ahead basis will determine the range of electric demand the can put onto the grid in real-time. If the project offers Reg UP and Red Down at 50 MWs and it is offered with increasing offer prices with increasing volumes, only a portion of the ancillary services offered will clear. For example, if they offer 10 MWs of AS at \$40/MWh, 10 at \$50/MWh, 10 MW at \$60/MWh, etc and the market price clears at \$52/MWh, they will be committed to provide 20 MW of AS for those hours because volumes above 20 MWs were offered at price above the clearing price of \$52/MWh. That will leave 30 MW out of the 50 MW offered available to consume energy to produce their product. In the spot market (real time) they will determine a threshold value of energy above which they will shut down or reduce load. Directly to you question, during high load/peak load events, they will know based upon the cleared volume of AS what the range of AS and energy demand will be and will operate the project accordingly. As you can see, this range of operating options lends itself well to artificial intelligence applications that use algorithms to optimize the value proposition to the Project. The owner of the project is adroit in this valuation methodology and has developed several patented products to optimize this AS to energy to product mix.
- which entity (ERCOT, DME, Tenaska, other) is supplying those credits to the compute client end-user? The contract requires the end user to provide the RECS by a date certain each year, after which any shortfall will be purchased by DME with full reimbursement of such costs by the end user (owner of the project).

- 
- does DME receive fees/revenue during both power use and power credit events or are power credit events expenses to DME? DME's compensation is based upon net energy consumed by the project. Ancillary Service revenues from the market will be netted from power purchase costs and the resulting net bill will be assessed the Franchise Fees, ROI, sales taxes, etc.
  - Will this data center plus others around the state, even if stabilizing the grid by idling, create competition demand such that the spot market prices increase? This is a great question and one that is almost counter intuitive. During low demand periods – nights and weekends – when renewable of abundant and spot prices are low, these demands should increase the spot price. While that may not sound like a good thing, it actually is favorable to Denton. Because we are long renewables at a fixed price during these low price periods, any increase in the spot price will reduce the loss that we take on selling our renewable position into the wholesale market. For example, if we are buying renewable at \$20/MWh under of long-term PPA, and spot prices are \$15/MWh the net cost to DME is  $\$20/\text{MWh} + (\$20/\text{MWh} - \$15/\text{MWh}) = \$25/\text{MWh}$ . If as a result of these new demands during the low price periods the price rises to  $\$25/\text{MWh}$ , DME's economics are improved:  $20/\text{MWh} + (\$20/\text{MWh} - \$25/\text{MWh}) = \$15/\text{MWh}$ .
    - If we move into a peak demand situation such that the data center idles, but we still have housing/industrial load here in Denton that is beyond our negotiated block pricing such that we need to buy off the spot market to top us off, would data center competition spot market pricing increases actually impact our own purchasing power from the spot market. (i.e. are we chasing our tail and if so how much?) No because we will not be managing the data center supply on a forward basis like we do the DME load. We will continue to manage the DME load independent of the data center load because DME will have no price risk from the data center since the cost of energy for the data center will always be the spot wholesale market price. Said another way, the data center is always a price taker while DME will be actively managing the price risk for serving our load.
    - Similarly, would the ancillary services power surplus to the grid from idling the data center reduce or increase the likelihood of the DEC firing up to hedge financially? The sales of Ancillary Services from the data center should reduce the cost of AS across the whole ERCOT market. As a required service that DME must buy from ERCOT, this will lower the cost of AS that we must buy from the market. DEC dispatches could be marginally less because the procurement of this AS from the project by ERCOT provides additional reserves that could depress prices. However, remember that the DEC revenues only offset load purchase expenses. Thus, higher or lower costs are effectively awash.

What these questions are trying to address is : We don't want the data center to be causing us to pay more on the spot market just from its presence and we don't want the DEC to fire up more just from its presence. I don't think these are deal breakers *a priori*, but it important to me and citizens to better understand the dynamics of the transactions

Can you add these questions to the ones I sent you earlier, please?

-Brian

Brian W. Beck, Ph.D

| Councilor for Denton – District 2 | Denton, TX, USA, 76201 | V:940-293-7611 | Facebook:  
@BrianBeckforDenton | Twitter: @beckfordenton | [brian.beck@cityofdenton.com](mailto:brian.beck@cityofdenton.com) |  
[www.cityofdenton.com](http://www.cityofdenton.com)

**STAFF CONTACT:**

Terry Naulty, Asst. General Manager DME

[Terry.naulty@cityofdenton.com](mailto:Terry.naulty@cityofdenton.com)

(812) 972-1457 mobile

**REQUESTOR:** Council Members Armintor and Beck

**PARTICIPATING DEPARTMENTS:** DME

**STAFF TIME TO COMPLETE REPORT:** 8 Hours