3/22/22

**INTERVIEW WITH**: Rob Roman, F&S Director of Utilities and Energy services

**CONCISE SUMMARY:**

On 3/22/22 the team interviewed Rob Roman. Rob’s biggest concern with a clean energy transition was the monetary aspect. The university only gets a certain amount of funding each year and a large amount of money is going to be needed for improvements to the system. Rob thought that geothermal is a good option for the University and thinks that it could be feasible on a large scale but would need to consult an expert to determine the land use. Rob also thought that a micro nuclear reactor was a very good option for the University with the caveat that it will be very expensive. He thought that the university does need to transition from its steam use for heating on campus unless a better emerging technology comes along. Rob told the team that biofuels have already been tried for the steam production, but it wasn’t feasible due to the transportation costs compared to natural gas and coal. Rob felt that for future energy plans they account for ambiguity and emerging technologies and have a place for energy storage which the campus currently does not utilize.

**DETAILED INTERVIEW NOTES:**

**Questions:**

1. What do you feel is the biggest challenge for the clean energy transition on this campus?
   1. Monetary
2. Should the consultant look at Geothermal, to what scale?
   1. Would like to see more of a central system geothermal alone could potentially be too much room
3. Should the consultant look at Nuclear, to what scale?
   1. Finds microreactor exciting
   2. Best and quickest way to become carbon neutral
   3. Faith in nuclear, brick houses have more radiation than nuclear
   4. Compact and safe, not much needed for cooling- maybe just a couple cooling towers
   5. Radioactive waste must be stored, biggest setback
   6. Doesn’t know of any US schools that use microreactors- Purdue is looking into it. It's a hot topic
   7. Reactor would be by Abbot
   8. Need grant from DOE
4. What are your thoughts on transitioning from steam use for heating on campus?
   1. Doesn’t necessarily need to change to electric. Possible change to high or medium temp hot water- offers solution to steam pressure issues. Geothermal and solar can be used for heating water.
   2. Not sure how converting from steam to water could happen. Main district energy loop still uses steam, transitioning buildings to hot water. Need to do a study on hot water to find cost, write a plan for a 10-20 yr. transition. Any new buildings use hot water
5. Should the consultant look at developing a source of natural gas? Maybe landfill capturing of methane?
   1. Biogas, tends to be expensive
   2. Still potential if it was cost efficient
6. What types of energy storage have potential on campus?
   1. No electric storage yet, should investigate this, Storage is key, coupled with demand reduction. Key issues: high cost, social issues with batteries (not convinced batteries are the answer),
7. Do you think there are any weaknesses about previous plans that need to be specifically addressed and may need more attention in future?
   1. Cost needs to be addressed
   2. Fluid plan that can adapt, plan might need ambiguity
   3. Combination of carbon sequestration and fossil fuels, reliability issue, fossil ensures reliability
   4. it is dynamic to do whatever is cheapest with the resources at hand (i.e., if coal prices drop, coal and sequestration may be a cheaper and better energy than certain renewables)
8. Moving forward, would you recommend any people within your team that we could also contact/meet to gain more information?
   1. UIC - Cynthia Klein-Banai: Director of Sustainability
   2. Brad Simmons - utilities, building controls and energy production
   3. Edwardsville - educative director of facilities
   4. Karl Helmink and Mike Larson
   5. Brad Simmons: buildings controls and energy productions (works with utilities and energy stuff)

**General Notes:**

* Director of utilities and energy services at UIC and now here
* DoE funding for hydrogen
* We need electrification storage; generation systems are not as much of an issue. The cost is too high, but the technology is there (just not necessarily available). Also, social issues with lithium mining for batteries.
* Downside to geothermal; not enough farm ground
* Former chief engineer for Abbot power plant
* Deals a lot with distribution and usage - ESCO projects
* Haven't done too much of electricity storage in the utilities group. Do use chilled water for storage
* He sees nuclear as a top solution to carbon neutrality. There is radioactive waste that needs to be stored forever. Will this have long term effects on the environment? Biggest and one of the only downsides is the public perception of nuclear power. “There is more nuclear radiation living in a brick house than working at a nuclear power plant”.
* Hydrogen production and distribution
* Need different energy generation sources, can't rely on one
* Short term: policy
* Transportation related to biofuels creates a lot of carbon, big setback, could investigate calculation
* btu of carrying miscanthus outweighs the need of coal
* natural gas, coal, oil, etc. cannot be independently relied on because the market fluctuates a lot; so there needs to be constant transitions. Natural gas is *generally* correlated to the costs of petroleum (gas)
* retro commissioning program: saving energy building.
* Is economic feasibility always the most important? Transition from generations, where the need to transition to low carbon emission weather or not is cheaper. New generation is willing to advocate for this. Client (students) wants this,