

# Climate Change, Energy, and Environment Commission (C2E2)

Summary of June 27, 2022

Virtual Meeting

Members Present: Joan McIntyre (Chair), Carrie Thompson (Vice Chair), Jonathan Morgenstein, John Bloom, Emily Emery, Joshua Griset, Kevin Vincent, Mikaila Milton, Timothy Effio,

Members Absent: Stephen D'Alessio, Shawn Norton, Gilbert Campbell, Majdi Shomali

Guests: Jeff Lawrence (EnerTech), Steve Hurwitz (EnerTech), Ginger Evans, Cindy

Staff Present: Rebecca Moser (DES), Demetra McBride (DES), Paul Roman (DES)

## 1. Public Comment on General Topics

None

## 2. Ground Source Heat Pumps – EnerTech

Jeff Lawrence presented on geothermal heat pumps for commercial buildings.

- Before starting, must have an energy goal and identify what needs to be achieved.
- Examine site for best geothermal loop location and type
- Determine building zone loads and block loads & energy modeling to determine energy loads.
- Select loop length with software – individual loop or large common loop.

Heat pumps: referring to water source or geothermal heat pumps.

Balanced Operation: during non-peak conditions, heat pumps transfer heat from one part of the building to another, providing a “neutral” effect with regard to ground loop heat transfer. This operating condition provides very high efficiencies. Any waste heat is a bonus in northern climates.

Types of Geothermal Loops:

1. **Open Loop/Standing Column/Re-injection:** using ground water directly with a submersible well pump to the building through the heat pumps and back to the ground. There are regulations about re-injecting ground water back into the ground. Cost: this is the least expensive system.
2. **Closed Loop System:** very common. Series of pipe buried in the ground.
  - a. Vertical – Series of pipes buried in the ground vertically. Circulate the water in a closed loop system.
  - b. Horizontal – Series of pipes buried in the ground horizontally. Trenches or large pits dug in the ground for the pipes to lay.
  - c. Pond/Lake – Common to use when next to a large body of water. Piping in the water. Very cost effective method. Con – piping needs to be protected against fishhooks and other potential water activities that could damage/snag the pipes.
3. **Hybrid Systems**
  - a. Cooling Tower & Ground Loop
    - i. Cooling Towers are common in this area/Arlington. Most common type of system used for commercial building.

Hybrid Ground Loop/Tower System – taller buildings may need a hybrid system because there's a balance of cost. It requires a large cooling load and will need to eject that energy with a cooling tower. Constant trade of where you spend your money.

There is no limit to the number of pipes for geothermal, as long as there is room to drill, even for the biggest of buildings. Can drill below garage parking lots. Surrounding space around the building, green space, etc.

Open loop (loop field) design used for St. Patrick's Cathedral in Manhattan, NY – drilled in the road, used ground water directly to circulate water through the pipes. Very common to do this in cities.

Zero maintenance for a closed loop system outside. Series of high-density pipe that are heat fused together. There is rigorous testing before installation, but once the pipe is in the ground, it requires minimal to no maintenance and will last for generations. However, open loop systems, when using ground water directly, there will absolutely be maintenance. Typically, separate ground water from the internal piping system with a heat exchanger. Simplify maintenance by installing the heat changer so maintenance is required for only one side.

Open loop is a cost-effective way to get geothermal because it is cheaper up front, but there is maintenance involved in the long run as opposed to a closed loop system.

It is possible to install geothermal in not only new communities but existing ones as well. However, it is hard to get entire communities on board with geothermal.

Jonathan: Are there broader environmental implications of using rivers surrounding NYC as heat sinks? Have studies been conducted on this?

Jeff: If the entire city was using an open loop system, it would definitely have an impact on the water. Studies should be done to ensure there's no impact on the water. Some studies have shown zero impact on water to cool college campuses in Ithaca. But largely, there has been no study that shows a negative impact on the environment.

Partner with EnerTech named Orca Energy. Originated from Canada about 20 years ago. Now in the United States, west coast based. This company has worked on several thousand homes and large commercial projects all over the Country. Helpful for developers, Orca takes away the first capital cost of the loop infrastructure. Orca installs it, and over time, like any other utility company, collects money and even shares revenue with developers. The biggest deterrent to geothermal is the cost of equipment, easily mitigated by tax incentives, but the infrastructure is the first real cost.

Single family homes: There is of course the up-front cost. On an individual basis, installing geothermal is up to the homeowners. However, there are developers building single family homes on developments and the decision to have those communities be electrified geothermal is made at the beginning. Geothermal is by far the most efficient energy user of electricity over any other technology.

### **3. CIP Q&A Discussion / Letter Review**

Demetra: Several issues that were not correct from the letter reviewed at the energy committee.

Letter: Generally, while there is a strong focus on environmental issues, still some concerns about how exactly the County is addressing the CEP and other climate goals. Goes back to similar concerns from last year.

Demetra: Important distinction: the county manager's introduction to the CIP with regard to the environmental investments, refers to environmental, climate and energy resilience. When discussing stormwater, C2E2 focuses on greenhouse gas emission projects, and conflating that with what the County manager was referring to. He was throwing a broader umbrella to include resilience etc. The stormwater fund is funded exclusively through a dedicated tax. This tax cannot be used for anything

else other than the stormwater program. It does not affect the debt limit of the County because it operates as an enterprise fund.

Joan: The projects listed reflect infrastructure investments and building maintenance necessary as part of a general capital investment, but not necessarily advancing C2E2 issues and advance climate resiliency goals.

Commission decided to not compare Arlington to Fairfax, this would be an added distraction. The County won't meet its goals.

Demetra: Just a thought, no need for a decarbonization plan because the County already has the CEP (Community Energy Plan), the CEP Roadmap, ART Bus CEB study, Decarbonization Transportation Master Plan for both government and community wide. You don't need a decarbonization plan for buildings, because a significant number of these elements are being accounted for in these plans. Perhaps it is simply an update to the sustainable facilities policy.

John: A plan that shows a timeline of which buildings will need system updates would be helpful.

Next recommendation: electrification of all new facilities in addition to existing. Areas that should be reflected in the CIP. HVAC systems are listed for replacements, but only one system specifically is mentioned as a pilot for total electrification.

John Bloom: I see this text as relating more broadly to the need for climate impact review of decisions before they're made, whether they're CIP decisions or not. Whether climate gets considered seems ad hoc right now. We used to have environmental assessments, now we don't. There was an effort to get a procurement policy in place, but that really didn't work. Big contracts, like the landscaping contracts, go through without climate impact consideration. So it would be good for C2E2 to see that systems are in place across the government to consider climate impact and the CEP.

Demetra suggested a clear, easily digestible message for building electrification, might want to suggest a pathway similar to our strategy for reaching 100% renewable energy electricity. It doesn't exist yet for electrification of buildings. Should be done early enough for adoption before the next update of the CEP in two years. It must be developed, socialized and accepted, in time. Agrees that there is a gap on the pathway to electrification.

John: Staff be requested on a reasonable timeframe to conduct an environmental review of projects. Must be an understanding in each department that these things happen. Demetra: this will be different for new building construction and upgrades to existing buildings.

The Commission would like the default to be the electrification of buildings and any systems that depend on fossil gas. And requiring changes or reporting when this cannot be met.

The Commission voted unanimously and approved the letter.

#### **4. EV Charging and Rate Ordinance Update – Demetra McBride**

Meant to be an interim ordinance with several specific sites with multiple portals at each station. Total charge includes the data software, operations, and maintenance. There will be no taxes because it is on public property, a very small administrative charge, will be under 14 cents. This is still significantly less than commercial rates and much less than Dominion charges. Gathering data for at least 6 months for analysis. Not as much detailed information/data because stations are not submeters. We will be able to draw off the use data from a third-party vendor, charge point.

Joan: Should I or could one of the other commissioners speak briefly about this ordinance at the July 16<sup>th</sup> meeting? Our key message would be that the Commission supports the proposed ordinance as it will continue to advance the County's effort to advance EV infrastructure. It makes sense to charge people for this service that has a cost to the government. Commissioners approved.

## 5. Legislative Discussion

Letter is typically finished in July. Joan pulled up the letter from the previous year. Much of this will be defensive and highlight the importance of defending the Clean Economy Act and RGGI. Any progress on previous priorities would be a bonus.

Joan asks for a volunteer to help draft this letter. Must be approved at the next meeting.

Carrie: Anything supporting the right to repair and extended producer responsibility? Answer? Yes.

Joan to draft a letter for approval at the next meeting (July).

## 6. Missing Middle Letter – Draft Review

This is an extremely complex issue. The recommendation coming out of the study is to allow for missing middle housing, such as duplexes, small townhouses, triplexes, and even up to six or eight unit housing types on land that is currently zoned for single family. Must fall within the permissible footprint of a single-family home. The goal is to provide additional housing types and somewhat less expensive housing types. Very few of these housing types would qualify as affordable housing.

Process question: if the Commission cannot agree on content today, when is the deadline to submit this letter? There is a work session in July, which will direct County staff to continue to the next phase. It would be useful to provide input prior to that meeting and hone in on the Commission's key message.

Johnathan: There is a serious problem with the degree of success of this plan articulated and proceeding would have a negligible impact if it only helps 170 people, which could mean only 50 houses in the entire County.

Kevin: Higher density around metro areas will mean more cars and more parking occupied with cars, which will lead to more carbon emissions unless public transportation is 'beefed up'.

Demetra – Developers will disturb enough land to trigger the LDA, so there is no way to remove the site plan requirement. We cannot trade energy efficiency for a site plan review.

John: Regarding transportation – it would be great to have public transit improved and serving all corners of the County before this is realized. Regarding sprawl – when people live close to work, goods, and services, they use cars much less than they would in the outer suburbs. Important to look outside of Arlington to see the benefits of this.

Joan: Key issue is the lot coverage allowance for single-family homes. It is too large and too detrimental for the Commission's environmental goals, for example tree canopy, stormwater runoff, etc. Small homes get torn down and are typically replaced with larger homes on the same lot.

Tim: Why would we endorse existing standards for single-family home development if we don't agree with them? No one on this Commission has voiced support for the current standards of single-family home development. It is best to simply state that we don't agree with current standards.

### **Two major areas of concern:**

1. Equity Issue and general decreased energy consumption by higher density living within the same square footage and counteracting sprawl.
2. Transportation needs to be evaluated and studied, especially with people working from home. Typical transportation patterns have changed.

In principle, the Commission does support allowing missing middle in Arlington.

1. Establish higher standards for the missing middle than allowed for single-family homes in order to build houses consistent with the CEP. At least higher standards for housing that would be consistent with the CEP.
2. Specifically, too, to not approve of any effort to increase the allowable lot size of impervious surfaces given the environmental impact.
3. What the County should give priority to, to issues related to lot coverage, (not the type of housing),
4. Developing a more robust transit system to meet the needs of all Arlingtonian's, no matter where they live. \*Note: that this is not affordable housing. The County might want to think about creative ways to expand affordable housing within the community.
5. The County should have something like an "energy LDA" (Land Disturbance Activity Ordinance) for missing middle and single-family homes. When a zoning change is made, it is extended to single-family homes as well, not just missing middle.

Joan or Tim to redraft the letter this week.

Priority not to berate the Board over affordable housing. Goal should be for better transit systems and lot coverage, and creative ways for more affordable housing. Any new housing to be more energy efficient.

The Commission unanimously voted to approve the content for the missing middle letter to the Board.

## **7. Electronics Meeting Policy Review**

This agenda item was skipped due to time constraints.

## **8. Meeting Minutes**

The Commission unanimously voted to approve all outstanding meeting minutes.

## **9. Old/New Business**

Demetra to provide information about the public process for comment to the SCC on shared solar in Richmond. Short window for four meetings. Will confirm if there is a virtual option, but there will be opportunity for public comment.

Joan noted that the Forestry and Natural Resources Master Plan will be out in the next week or so. It will be circulated and there will be a briefing at the next meeting.

Meeting ended: **9:16pm**