

DOCKETED	
Docket Number:	19-IEPR-06
Project Title:	Energy Efficiency and Building Decarbonization
TN #:	227609
Document Title:	Lisa Meline, P.E. Comments Invite GHPs to the Table
Description:	N/A
Filer:	System
Organization:	Lisa Meline, P.E.
Submitter Role:	Public
Submission Date:	4/11/2019 8:03:21 AM
Docketed Date:	4/11/2019

Comment Received From: Lisa Meline, P.E.
Submitted On: 4/11/2019
Docket Number: 19-IEPR-06

Invite GHPs to the Table

I have been working in the geothermal heat pump industry for over 20 years. The technology is all electric and more efficient in most locations than air-source heat pumps. Geothermal heat pumps make the most sense along coastal areas (heat exchanger is buried below the earth), areas where propane and electricity are the only sources of energy for heating and cooling, and for commercial buildings in 15 of the 16 climate zones of California. Shouldn't this segment of the HVAC industry be invited to the Building Decarbonization discussion? See links below and attachment.

<https://www.energy.ca.gov/2014publications/CEC-400-2014-019/CEC-400-2014-019.pdf>
<https://www.energy.ca.gov/2014publications/CEC-500-2014-060/CEC-500-2014-060.pdf>
<https://www.hpac.com/heating/study-geothermal-heat-pumps-outperform-vrf-ashrae-headquarters>

Additional submitted attachment is included below.



**US Army Corps
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ENGINEERING AND CONSTRUCTION BULLETIN

No. 2017-7

Issuing Office: CECW-CE

Issued: 22 Mar 17

Expires: 22 Mar 19

SUBJECT: Changes to UFC 3-410-01, Heating, Ventilating and Air Conditioning Systems, with Change 3

CATEGORY: Directive and Guidance

REFERENCES:

a. Unified Facilities Criteria (UFC) 3-410-02, Lonworks ® Direct Digital Control for HVAC and other Local Building Systems, with Change 1

b. Unified Facilities Criteria (UFC) 3-410-01, Heating, Ventilating and Air Conditioning Systems, with Change 3

1. The following changes to the HVAC Systems UFC were recently completed.

2. A paragraph on Variable Refrigerant Flow (VRF) Systems has been added to the HVAC Systems UFC (Par 3-5.16). VRF Systems will no longer be permitted in Air Force facilities. The Army will allow VRF Systems; however, they will be strongly discouraged. The Navy is not restricting VRF systems as long as they comply with ASHRAE 15 Safety Standard for Refrigeration Systems.

3. The reasons for the changes to VRF systems include:

a. Concern of Refrigerant Concentration - the refrigerant lines are run inside buildings usually over office spaces. A typically sized VRF system contains enough refrigerant to asphyxiate occupants in the event of a refrigerant leak.

b. Long refrigerant runs are common with VRF systems and many times the lines are branched out. A refrigerant leak would be difficult to locate and once found very difficult to repair as there is other piping and ductwork installed in dropped ceilings.

c. VRF Systems have proprietary control systems. These closed systems are not permitted per UFC 3-410-02 Lonworks ® Direct Digital Control for HVAC and other Local Building Systems , with Change 1. This UFC states, “An Open DDC system is characterized by the ability for any qualified entity to readily modify, operate, upgrade, and perform retrofits on the DDC system.”

4. The aforementioned changes to the HVAC Systems UFC were posted on 26 January 2017.

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5. The point of contact for this ECB is Timothy Gordon, CECW-CE, 202-761-4125.

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