
File #: 17-0741, Version: 1

2018 COUNCIL STUDY ISSUE

Draft Study Issue: Encouraging Heat Pump Water and Space Heating

BACKGROUND

Lead Department: Environmental Services Department

Support Department(s): Community Development Department

Sponsor(s):

Councilmembers: N/A

City Manager: N/A

Board/Commission: Sustainability Commission

History:

1 year ago: [Dropped/Deferred/N/A]

2 years ago: [Dropped/Deferred/N/A]

SCOPE OF THE STUDY

What are the key elements of the study?

- Identify costs and savings to city, developers, residents and businesses of purchasing and installing Heat Pump water heaters and HVAC space heating systems in a) New construction (Residential and Commercial), b) retrofit/replacement.
 - o Consider savings in permitting and construction for all-electric developments without gas connections (New construction).
 - o Consider both initial costs (which may be higher than gas options until adoption rates and volume increase) and expected savings over time especially if paired with rooftop solar PV (New construction and retrofit).
- Identify benefits to community and environment. Significant reduction in greenhouse gas emissions from buildings is expected as new and existing buildings move to electric heat pumps for water and space heating. If new developments go a step further and install 'all electric' appliances and systems, there is additional benefit of improved safety (no gas leaks or fumes or explosion risk), lower costs without a gas pipeline connection, and even greater reduction in greenhouse gas emissions from not burning fossil fuels. There may be some downside for those who do not prefer to switch to electric/induction cooktops.
- Identify cost of a pilot study (perhaps in partnership with Silicon Valley Clean Energy) to offer rebates and/or reduced permitting fees to residents and businesses that choose heat pump technology for retrofits or small-scale new construction.
- Study cost of implementing a public outreach program (again in possible partnership with SVCE) to encourage planning ahead for water and space heating replacements and consider the benefits of heat pump technology.
- Benchmark and monitor progress of other cities in the region that have undertaken similar actions. Palo Alto, for example offers \$1500 rebate in its [Heat Pump Water Heater Pilot program](#)

<http://www.cityofpaloalto>.

- In conjunction with CAP 2.0, evaluate GHG reduction estimates for water and space heating conversion to electric heat pumps and whether a work item should be added to the next Climate Action Plan.
- Evaluate options for city ordinances or policies to encourage or require heat pump water and/or space heating in new construction. Note that 'incentives' encouraging adoption would not require a 'reach code' whereas 'requirements' would.

Potential outcomes of this study:

- Decision to add a related action to the Climate Action Work Plan.
- Decision to run a pilot program for residential and commercial rebates or fee reductions for heat pump space and/or water heaters.
- Decision to fund a public outreach campaign to encourage conversions to heat pump water and space heating.
- Decision to update or create a City ordinance or policy (as part of Green Building Code for example) that would incentivize or require developers to choose heat pump water heaters and/or space heating for new developments.

What precipitated this study?

Accelerating the Climate Action Plan is a Council Priority for 2017. The current Climate Action Plan does not address fuel switching in buildings. Considering that 100% greenhouse gas free electricity is now available through Silicon Valley Clean Energy, the burning of methane gas will now be the largest contributor to greenhouse gas emissions from the built environment. Fuel switching to electricity for the largest uses of energy in most buildings - space and water heating - will lead to a significant reduction. Tools such as an update to the Climate Action Plan and city ordinances could be used to encourage the switch to electricity in buildings. Heat pumps for water heating and space heating are highly efficient and increasingly cost effective as discussed by Pierre DelForge of the Natural Resources Defense Council in the first Sustainability Speaker Series event held May 31, 2017.

The California Energy Commission is developing a Solar Photovoltaic Model Ordinance (for new residential construction) to help California cities interested in clean energy and climate leadership. This will encourage cities to adopt a local "reach" building energy code, helping pave the way toward zero-net energy (ZNE) homes. As part of the comments to the CEC on the Solar Photovoltaic Model Ordinance, the NRDC and others encouraged the CEC to expand it to include a "Renewable Water Heating" option as well. If adopted, the Renewable Water Heating portion would make it easier for Sunnyvale to create a Reach ordinance requiring Heat pump or Solar water heating. In the referenced "Letter to CEC from NRDC et. al." the NRDC proposes text for a Renewable Water Heating Model Ordinance and justification for why adding Renewable Water Heating to a Solar Photovoltaic Model Ordinance makes sense.

A listing of other cities that have already adopted ordinances that go beyond Title 24 requirements can be found here: <http://www.energy.ca.gov/title24/2016standards/ordinances/>.

Reference Attachments:

- CEC Model PV Ordinance Proposal 04-2017
- Letter to CEC from NRDC et. al. Comments on CEC Proposed Model Solar PV Ordinance

and Proposal for a "Renewable Water Heating" Model Ordinance

Planned Completion Year: [2018]

FISCAL IMPACT

Cost to Conduct Study

Level of staff effort required (opportunity cost): [Major/Moderate/Minor]

Amount of funding above current budget required: \$ [or enter \$0 if total expected funding is \$0]

Funding Source: [(select one) Will seek budget supplement or Will seek grant funding]

Explanation of Cost:

[Briefly explain the cost of study; including impact or workload and how any additional dollars will be used. Describe the level of complexity that will be required in order to complete a thorough, professional examination of the study issue and any effect this examination may have on existing workload and service level responsibilities.]

Cost to Implement Study Results

[(Select one) "No cost to implement.", "Unknown. Study would include assessment of potential costs.", "Some cost to implement."]

Explanation of Cost: [If there is some cost to implement, briefly explain potential costs of implementing study results. Note estimated capital and operating costs, as well as revenue/savings, include dollar amounts. If there is no cost to implement, delete this section.]

EXPECTED PARTICIPATION IN THE PROCESS

Council-approved work plan: [Yes/No]

Council Study Session: [Yes/No]

Reviewed by Boards/Commissions: [identify the B/Cs, full name, no acronyms]

STAFF RECOMMENDATION

Position: [Support/Drop/Defer/None]

Explanation: [Explain the staff recommendation position.]

[If additional departments support this paper, include those who need to review below and add to Legistar ATS sequence.]

Prepared By: [Name], [Title]

Reviewed By: [Name], Director, [Department]

Reviewed By: Walter C. Rossmann, Assistant City Manager [or] Walter C. Rossmann, Assistant City Manager

Approved By: Deanna J. Santana, City Manager