

Mitigation Work Group - Buildings Ad Hoc Group
August 6, 2020

Meeting began at 3:00pm online.

Attendees: Mark Stewart, Chris Hoagland, Cindy Osorto, Eric Thunell, Chris Russell, Kirsten Jackson, Lori Graf, Tom Ballentine, Susan Miller, Julian Varo, Ruth W Rice, Kenneth Schisley, William Ellis, Phil Webster, Thomas Walz, John Fiastro, Jennifer Gallichio, Jessie Keller, John Patrick, Abdul Mohammed, Amanda Best, Angelica Bailey, Bryan Howard, David Smedick, David St. Jean, Ellen Valentino, Emily Curley, Erick Thunell, James Grevatt, Jennifer Eugene, John Quinn, Julian Varo, Joshua McClelland, Kenneth Schisley, Kimberlee Drake, Laura Armstrong, Richard Louis, Maria Frazzini, Phil Webster, Richard Louis, Ruth White, Ryan Opsal, Stephen Holcomb, Susan Miller, Thomas Walz, Tom Ballentino, Liz Feigner, Donald Goldberg, Eric Coffman, Jennifer Eugene, Michael Powell, Sam DuPont, Cherise Seals, Kim Coble, Aaron Greenfield, Thomas Marston

- **Introduction and Overview of Agenda** - Mark Stewart, Facilitator
 - A new study published a few weeks ago shows that the world missed its opportunity to keep global warming to less than 2 degrees celsius and prevent catastrophic climate change
 - Local effects include losing half of Dorchester County in the coming decades and devastating impacts to Ocean City; state has already lost \$1 billion in coastal property value
 - Buildings of today will still be use in the later half of this century
 - MD's current GGRA law aims to reduce gross emissions between 80% and 95% from 1990 levels by 2050.
 - Building emissions reductions will be needed
 - MDE's consultants estimate that if all new buildings in MD were built to all-electric standards starting in 2025; 1.3 million existing buildings were retrofitted with electric heat pumps by 2050; and we make continual progress on improving the energy efficiency of buildings; then buildings sector emissions would reduce by about half
 - Many studies show that all-electric new homes have lower construction and energy costs than mixed-fuel homes in several US markets
 - Next meeting on August 20th: existing buildings discussions
 - Discussion on GHG reduction target approaches include energy efficiency and synergistic approaches
- **Maryland Building Industry Association** - Lori Graf, Chief Executive Officer
 - Introduction by Lori
 - MBIA focused response on Maryland – also currently working on a forthcoming study of three regions
 - New homes in Maryland today already exceed IECC standards
 - Energy star participant

- Housing shortage has been exacerbated by Covid – affordability issues is a priority
- **Thomas Marston – Regional Manager**
- New home standards are not necessary and marketplace can decide and find solutions
 - Gas options remain an important consideration
 - Federal programs (Energy Star, DOE ZER, NGBS and LEED programs) could flourish with state support and messaging
- Proposed community: Tivoly Eco-Village, opening 2021
 - Safe place to have resiliency options
 - Gas turbine planned – best available practice – cost considerations
- Innovative approaches needed – county land use purview is a component
 - Ex. Community solar, low-energy-consuming buildings, NGBS-certified land use standards
- Implementation timeline
 - Good, better, and best consumer education messages for consumers are needed to explain energy performance options
 - Gas has limitations and heat pump demand may be low
 - Other considerations: Building envelopes, air ducts, etc
- Case study: Baltimore builder built a Sustainable Design Award winning house
 - Had to educate loan originators of energy savings and buyer tax credits
 - There should be a mainstreamed re-education effort for financing
- Exemptions
 - Allow developers to supply gas at a single point when they forgo community gas service
 - Keep the trees
- Potential incentives
 - Discussion of federal and state and local tax credits
 - Backstop federal tax credits
- Barriers to adoption
 - Gas is perceived as less expensive and more comfortable
 - Lack of appraiser education re. energy efficiency and Green advantages
 - Steep learning curve to reach innovative solutions
 - Building partners resist re-tooling without a significant investment that is supported with long-term funding sources
- **NAIOP Maryland Chapters-** Tom Ballentine, Vice President for Policy and Government Relations
 - Electrification of New Buildings
 - Cannot accomplish a target date for decarbonization of buildings
 - A lot of work needs to be done on the zero-energy front before any target can be made, including policy, economic, and technological advancements; and decisions from FERC, PJM, etc
 - Best approach: near-term efforts should have immediate returns on investment



- The International Energy Conservation Code (IECC) is on a path to reduce energy and greenhouse gas emissions
 - 2021 Code is expected to be 10% more efficient than the one being replaced
 - Efficiency of commercial energy code improved 39% since 2006
 - IECC will revise the energy code nine times between now and 2050.
 - The pace is determined after necessary discussions have been made; including considerations for cost-effectiveness, building comfort and environmental goals
 - Emissions reductions will vary by building type (residential, commercial, industrial)
 - Feasibility is particularly challenging for large commercial buildings with energy intense activities
 - E3 Study mentioned California heat pump performance but these heat pumps did not use supplemental heat
 - Air source heat pumps rely on extracting heat from outside air. When temperatures drop and the heat source is reduced, or non-existent supplemental heat sources are triggered and electricity use increases
 - Comfort and cost implications of heat pumps will be different in CA vs MD, including due to temperature differences and utility rate differences
 - In one HVAC energy simulation in four different climate zones, the electric-only HVAC system had the highest overall costs
 - Main point: need local information and study of cost-effectiveness
- **Pepco Holdings**, William R. Ellis, Director of External Affairs and Customer Programs
 - Exelon has a commitment to consider greenhouse gas emissions, including by reducing emissions from supply chain, grid, and operations
 - Building
 - Holistic approach needs to be considered
 - Best way – start with new construction and innovation
 - Many studies show positive cost effectiveness for these approaches
 - Heat pump technologies
 - Programs that encourage and incentivize net zero or all-electric technologies, both in commercial and residential capacities
 - Leverage EmPOWER programs that have already had a lot of success – incentivize, educate etc
 - Beginning net zero construction in 2021
 - Existing buildings – gradual approach is recommended
 - Substantial incentives would be needed to achieve cost effectiveness
 - End of use life considerations
 - Incentivize
 - Propane or oil systems may be a starting focus
 - Marylanders have saved millions of dollars through EmPOWER MD
 - Load considerations for peak times
 - PC44 team of use rates – shift loads to off peak times and consider EV considerations that reduce grid strains
 - Exelon is committed to modernizing infrastructure
 - Operations gas emissions are expected to be reduced



- Investing in renewable gas – drives further emissions
- **Washington Gas**, Julian Varo, Senior Sales Engineer and Josh McClelland, Manager of Energy Efficiency Programs
 - Net Zero introduction – DOE has a definition and calculation available for net zero buildings
 - Comparison: All-Electric building example – source energy is low; hybrid building with natural gas and electric; and combined heat and power (CHP) building; the CHP-powered building presented greatest reductions
 - WGL has submitted a DC Plan
 - Gas heat pump technology is available in the market and not currently as market available as electric heat pump but it is developing
 - Fuel-neutral approach is best
 - Hybrid heating
 - Future conversions could go into electric – adds costs
 - Electrifying all buildings would “flip the peak” and thus have cost implications
 - Decarbonization of supply is underway
 - Renewable natural gas (RNG) is an important piece
 - WGL is participating in EmPOWER
 - Residential
 - High efficiency gas equipment
 - Energy star new homes
 - Zero energy ready home
 - Commercial
 - Rebates to property developers for high efficiency gas equipment
 - Energy efficiency is an important piece
- **Sierra Club**, David Smedick, Senior Campaign Representative for Beyond Coal and Dirty Fuels Campaigns
 - Residential – New Construction Standard
 - No new gas infrastructure is best
 - Other states and jurisdictions are moving towards new construction standard
 - Clean Energy DC Plan – Net Zero Code
 - All-electric-ready standards are a possibility
 - Designers, homeowners, contractors, etc need to be educated
 - New IECC code language includes zero energy appendix and would encourage everyone to take a look at this section
 - Emissions factors
 - The grid is still the most cost effective way to clean up and grid energy is going to fuel the future
 - Incentives
 - Proposal: Joint agency task force for affordable housing – clean, safe, and affordable
 - Merging programs
 - New construction and existing buildings



- Note: EmPOWER new construction program does not incentivize electrified options
- Commercial – New Construction
 - Net-zero and electric standard
 - Similar to all-electric model
 - Design early to that standard in order to meet cost-effectiveness
 - Incentives – permitting, restaurant-specific
- Fossil Gas Alternatives
 - Report available with Earthjustice: Rhetoric vs Reality: The Myth of “Renewable Natural Gas” for Building Decarbonization
 - There are limitations in availability and previous discussions have touched on investing those RNGs wisely into the future
 - Skeptical of DC Plan
 - “deficient” and will not need the DC Plan
 - Ongoing discussions underway
- **Discussion – All**
 - **Mark Stewart:** A note on heat pumps - cold weather technologies have become more efficient over time
 - Maine has the most aggressive heat pump technologies
 - **James Grevatt:** Challenges were presented. Technical possibility is not the issue. Design, education, and training is a part of the discussion for a path forward.
 - **Julian Varo:** Agree. Baseline understanding for net zero definition is needed. Definition from DOE wasn’t used. Net zero doesn’t favor carbon; amount of energy that is produced must be less than or equal to zero. What is the finish line? Fuel-neutral approach allows for flexibility
 - **Mark Stewart:** How do we achieve net-zero carbon emissions reductions according to the Work Plan goals?
 - **David Smedick:** Maryland should take a stance on net-zero and consider co-benefits
 - **Michael Powell:** We don’t have to stick to Work Plan language. The statute language has to be followed. The building can over or under perform. Net zero can still be a part of that discussion.
 - **Kim Coble:** significant and meaningful greenhouse gas reductions are necessary. Must be aggressive.
 - **Julian Varo:** Cost mindfulness is necessary. CHP considerations are necessary. Blended solution is a part of the solution.
 - **David Smedick:** Question for Tom and Julian – Are you considering stranded costs of the systems?
 - **Julian:** Jobs for CHP are designed for 15- 20- year block of financing. Example of DC home with CHP considerations.
 - **Tom:** CA natural gas transitions – PSC will have to look at financial implications (ex. On-site solar is going to change the cash flow from utility ratepayers); many commercial buildings like hospitals have high energy



needs (air circulation will be more pronounced); hybrid systems; long-term implications

- **David Smedick:** Scale – what is the percentage of systems that will need CHP? VS single-family homes? What is the projection of new construction?
 - **Mark Stewart:** What are some early recommendations that we can make?
 - **Ellen Valentino:** First step would be to conduct a reliability study to meet current capacity; any future targets being made now are ill-advised.
 - **Mark:** New England states have biofuels have some opportunity
 - **Chris:** Have some more resources to look into this; what's the problem today and what's the problem 20 years from now? Stranded costs?
 - **Thomas Marston**
 - Code recommendations – energy modeling
 - **James Grevatt:** neglecting the costs of societies that we're all going to pay if climate change is ignored
 - **Ken Schisler:** MBIA indicated that there would be higher costs associated with code changes; has not seen the opposite story. Energy costs – all-electrified approach will likely add costs
 - **Emily Curley:** local jurisdictions also have climate goals. Montgomery County has a goal for 80% reduction in GHG by 2027 and 100% by 2035. One "next step recommendation" is that MD adopt the ZERO Code Renewable Energy Appendix as a voluntary measure with the next code cycle so that local jurisdictions can adopt it. Thanks for the discussion.
 - **David Smedick:** there are various costs associated beyond simply up-front costs; many current incentives are aiming natural gas reductions
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- **Ending Remarks and Next Steps**
 - **Michael Powell:** Early adoption measures that advance the ball into the future.
 - **Kim Coble:** There is merit for immediate and small steps forward.
 - **Thomas Walz:** DHCD is going to request for a net-zero program in the EmPOWER cycle

