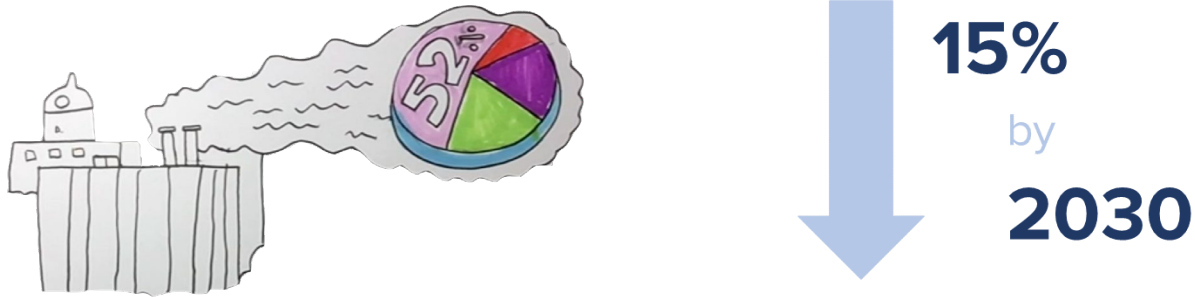




Missoula
COUNTY

Building(s) for the Future Summit
Breakout Group: Low Carbon Subdivisions and New Development
January 15, 2020, 12:30 - 3:00pm

Welcome to Building(s) for the Future and the “Low Carbon Subdivisions and New Development” breakout group. Missoula has worked to advance climate mitigation and adaptation efforts in recent years (adoption of the 100% Clean Electricity Resolution, Climate Ready Missoula plan, Zero by Fifty plan, etc). Buildings play a role in each of these efforts as **they comprise 52% of our community’s carbon emissions, according to 2014 data.**¹ They are increasingly important as pressures mount for development to keep pace with community growth, and in order to meet our carbon neutrality and 100% clean electricity goals, we estimate that Missoula must **reduce total building emissions 15% by 2030.**



To “build for the future,” we need to consider ways to decarbonize the design, construction, operation, and deconstruction of our building stock. Over the past several months, we’ve done extensive research and received technical support from the American Council for an Energy-Efficient Economy (ACEEE) and National League of Cities on building policy and program precedents and best practices to inform our conversation. Panelists from across the country will share inspiring and innovative approaches, and our breakout group will build on their presentations to chart the path forward for how Missoula can build a more equitable, low-carbon future.

There are many components to low carbon subdivisions and new development. Land use, transportation, and stormwater (to name just a few) are all important factors in low carbon subdivisions and new development. However, given today’s time limitations, this group will focus on the physical buildings that are designed and built in subdivisions and new development projects.² Many of these buildings fall outside of the scope of the policy levers that other groups will cover today. These buildings are built to code, yet we know this often falls short in key

¹ Climate Smart Missoula and City of Missoula. [“Missoula Community Greenhouse Gas Emissions Inventory,”](#) March 2017.

² Please note that our community is simultaneously engaged in different and extensive conversations about land use and transportation.

ways.³ How can we push beyond the status quo so that we're building for the future, with all-electric, solar ready, "pretty good" houses?

Below are topics to jumpstart the conversation, as well as some strategies to consider, to increase the number of low carbon subdivisions and new developments in Missoula.

Affordability and Energy Case Study: Whisper Valley

During the event, we will hear from the Whisper Valley development team, who built a net zero ready housing development in Austin, Texas. Whisper Valley is an environmentally-friendly, 2,000-acre master-planned development committed to sustainability, affordability and cutting-edge technology. Homes are zero-energy capable and at an affordable price point: a 3 bed, 2 bath, ~1300sf home starts in the mid-\$200,000s. As we consider the implementation of the Sxwtpqyen plan (formerly the Mullan Area Master Plan) or other area developments, how do we build homes there that are similarly going beyond code while maintaining affordability?

"Pretty Good House"

We will also hear from Mike Maines from the "Pretty Good House" group in southern Maine, which provides a framework and guidelines to focus on the core issues that should be front and center when designing and building a high quality home or renovation. The builders created this framework after frustrating experiences with building to the status quo and building to rating systems (e.g., LEED), the latter of which had them jump through hoops, some of which they felt did little to advance the project.⁴ If a house built to code is the "worst house you can legally build," the Pretty Good House goes above code to improve energy and sustainability measures and until it stops making financial sense -- this becomes the "sensible building standard." While we can't delve into every aspect of what makes a Pretty Good House, we *do* want this group to consider if and how we might make the Pretty Good House the standard new home that's built in the Missoula area.

Electrification

Achieving our community's carbon neutrality goal will require a shift away from the use of natural gas and propane in buildings. As such, new buildings need to be designed with electric heating, water heating, and cooking systems, and with no natural gas or propane infrastructure. Currently, gas stoves are immensely popular. Recent research, however, has shown there are serious indoor air quality and health impacts associated with cooking with a gas stove.⁵ Additionally, climate science underscores the importance of moving away from gas and propane infrastructure and towards all-electric systems for cooking, heating, and cooling. Gas and propane infrastructure is still allowed in the building code, but we know we have to move to all

³ Under Montana state law, Missoula cannot legally mandate more than what the building code requires.

⁴ "[Pretty Good House](#)," n.d.

⁵ Sabrina Imbler, "[Kill Your Gas Stove](#)," *The Atlantic*, October 15, 2020.

electric systems in order to meet our climate goals.⁶ How, without the ability to require it, can we shift the culture and practices to electrifying our new homes?

Solar Ready

In order to meet our 100% Clean Electricity goals, we will need to increase the amount of on-site energy we generate. Where feasible, we must encourage as many building teams as possible to build homes that incorporate solar, or that are, at a minimum, solar ready. In 2017, the City and County were designated *Sol Smart Silver* communities in recognition of their work to make solar energy more feasible in Missoula; as part of this effort, the zoning code removed barriers for solar energy. The City and County are already thinking about this in specific development areas: the Sxwtpqyen plan, for example, includes a recommended implementation step of requiring new development to be solar ready. How can we make homes in new subdivisions and developments at least solar ready?

Strategies to Consider

With technical assistance from the American Council for an Energy-Efficient Economy, the National League of Cities, and community members, we have identified several strategies that Missoula should consider implementing to increase the number of low carbon subdivisions and new development. This list is not meant to be exhaustive (we hope you will provide additional ideas!), and they are brief descriptions rather than comprehensive explanations of how such a program or policy would be designed or implemented. Our hope is that the following will jumpstart the group's conversation and help all participants begin from a place of shared understanding. As you read, consider the pros and cons of each, as well as what you believe Missoula should prioritize pursuing in the next year, 5 years, and 10 years. Strategies include:

- Expand available financing options (variety of forms)
- 1-stop energy shop for residential and commercial properties
- Home energy disclosure at time of purchase or rent (energy use label)
- Workforce development
- Energy efficiency "bulk buy"
- Expand access to low carbon and high efficiency materials

For an overview of all the strategies being discussed today, including the ones in this background brief, please reference Appendix A.

⁶ Because gas infrastructure is still allowed in the building code, Missoula does not have the authority to ban it at the local level through an electrification ordinance. Electrification ordinances have been popular in California, where 40 communities have voted to require all electric new construction. For more information, see Matt Gough's "[California's Cities Lead the Way to a Gas-Free Future.](#)"

Expand available financing options (can take a variety of forms)

- **Private financial institutions** can offer (or expand their offerings) of financial products for energy efficiency, renewable energy, and electrification efforts.
- **Utilities** can offer on-bill financing or on-bill repayment. In on-bill financing, the utility incurs the cost of the upgrade and it is repaid in monthly installments on the bill. On-bill repayment is the same except that a third-party provides the up-front capital for the improvement.
- **The City of Missoula**, as a charter city, can establish PACE financing where a clean energy improvement is paid for via property taxes. The repayment is attached to the property rather than the individual. **Missoula County** may also be able to establish a similar program tied to property taxes.

1-stop energy shop for residential and commercial properties

Technical assistance will be central to high compliance rates for any of this work. A 1-stop energy shop would centralize incentives and technical assistance to make it as easy as possible to implement energy efficiency measures, and it could also serve as a clearinghouse for lessons learned from flagship projects. 1-stop shops are typically pursued in partnership with the local utility, though Missoula may be able to create a 1-stop shop independently with appropriate funding.

Home energy disclosure at time of purchase or rent (energy use label)

Energy bills are a significant household expense, and yet prospective homebuyers or renters are typically unable to factor this information into their decision making. Unless a prospective buyer or renter specifically requests utility data, it is rarely provided.⁷ Requiring all units to include an energy use label at time of sale would allow homebuyers and renters to make better informed decisions. A home energy label provides information about a property's energy consumption and costs, plus recommendations for cost-effective energy saving improvements. While there are several rating systems available, the Department of Energy's Home Energy Score has become popular because of its simplified approach that makes it easy for home buyers and sellers to make comparisons across properties.⁸ Bozeman has identified this as a strategy in their most recent climate action plan, and they cite the Department of Energy's Better Buildings Initiative's statistic that energy efficient certified homes sell faster and for 4 to 6% more.⁹ While initial results from home energy disclosure policies in Portland, OR, Berkeley, CA,

⁷ City of Bozeman, MT, "[Bozeman Climate Plan](#)" (City of Bozeman, MT, 2020).

⁸ American Council for an Energy-Efficient Economy. "[Home Energy Efficiency Policies: Ratings, Assessments, Labels, and Disclosure.](#)" Washington D.C.: American Council for an Energy-Efficient Economy, October 2018.

⁹ City of Bozeman, MT, "[Bozeman Climate Plan](#)" (City of Bozeman, MT, 2020).

and Santa FE, NM are promising, more data is needed to assess the energy reductions that come with home energy disclosure and labeling.¹⁰

Workforce development

Pursuing a low carbon building stock will likely increase demand for a skilled workforce of energy service companies and contractors who can perform high-quality building audits and retrofits. Missoula will need to pursue partnerships between local energy efficiency businesses, Missoula College, and other relevant stakeholders to develop a robust clean energy workforce, as well as provide training opportunities for those already in the industry. Workforce development programs can and should diversify the clean energy workforce and support the hiring and training of those typically not employed in these jobs.

Energy efficiency “bulk buy”

A bulk buy program is when a local government makes a bulk purchase of high efficiency products (heat pumps, LED light bulbs, etc.) and then provides them to citizens at a below market cost to fill gaps in existing rebate and incentive programs.¹¹ This could reduce the upfront cost of high efficiency heating and lighting systems for project developers interested in low carbon new development. Such a purchase could be made in collaboration with other Montana cities to drive down cost and amplify benefits.¹² Ann Arbor, MI recently identified it as a top strategy to meeting their city’s carbon neutrality goal, with an estimated cost of \$3.92/MT of CO₂ reduced and strong health, economic, and equity co-benefits.¹³

Expand access to low carbon and high efficiency materials

Building materials are constantly evolving. As low-carbon, high efficiency materials (cross laminated timber, high efficiency windows, etc.) become more cost effective, it will be easier to incorporate them into retrofit projects. Additionally, this is a potential opportunity for supporting local entrepreneurs that focus on the manufacturing and distribution of these materials.

This work was funded by the National League of Cities’ Leadership in Community Resilience grant. For more information, visit www.missoulacclimate.org/buildings.










¹⁰ American Council for an Energy-Efficient Economy. “[Home Energy Efficiency Policies: Ratings, Assessments, Labels, and Disclosure](#).” Washington D.C.: American Council for an Energy-Efficient Economy, October 2018.























































¹¹ “[A2Zero: Ann Arbor’s Living Carbon Neutrality Plan](#),” April 2020.










¹² Bozeman has identified “Increase energy efficiency in existing buildings” as a top strategy in their recent climate plan. For more information, see: City of Bozeman, MT, “[Bozeman Climate Plan](#)” (City of Bozeman, MT, 2020).




















































¹³ “[A2Zero: Ann Arbor’s Living Carbon Neutrality Plan](#),” April 2020.










Appendix A: Overview of Strategies





































| KEY | | | | | | | | | |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of Tool | | | Building Stage | | | Feasibility Analysis | | Group Codes | |
|  |  |  |  |  |  |  |  |  | OWN - Owner Occupied Housing RENT - Rental Housing SUB - Low Carbon Subdivisions LARGE - Large Buildings INNOV - Promotion + Innovation INCENT - Developer Incentives |
| Incentive/Financial | Regulatory | Programmatic | Blueprint | Construction | Operation | Next Life (Decon/Rehab) | Move ahead | Some reservations | |

| Tool Name | Other Possible Outcomes (in addition to low-carbon buildings) | Implementation Lever | Could advance objectives of... | \$/MT of CO ₂ e Estimate | Legality | Selected Precedents | Groups Discussing |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------|
| Expand financing | <ul style="list-style-type: none"> Economic development | Public private partnership |     | N/A |  | Clearwater Credit Union, People's Gas in IL, Alabama Power | ALL |
|  | Expanded financing can take a variety of forms. Private financial institutions can offer (or expand offerings) of financial products for energy efficiency, renewable energy, and electrification. Utilities can offer on-bill financing or on-bill repayment. The City of Missoula or Missoula County can establish financing programs where repayment is attached to the property rather than the individual. | | | | | | |
| One-Stop shop | <ul style="list-style-type: none"> Greater coordination Increased community awareness | Public private partnership |     | N/A |  | Energy Trust of Oregon and Energy Works of Fort Collins, CO | ALL |
|  | The 1-stop shop approach makes energy efficiency more accessible for a larger portion of the population (commercial and residential) by simplifying a complicated process. It typically requires a strong partnership with the local utility. | | | | | | |
| Workforce development | <ul style="list-style-type: none"> Economic development | Public private partnership |     | N/A |  | Philadelphia, PA, Minneapolis, MN, and Raleigh, NC | ALL |
|  | Developing a skilled workforce of energy service companies and contractors who can perform high-quality building audits and retrofits is a key component of any of the strategies in this table. Missoula will need to pursue partnerships between local businesses, Missoula College, and other relevant stakeholders. Workforce development programs can and should diversify the clean energy workforce. | | | | | | |
| Expand access to materials | <ul style="list-style-type: none"> Economic development | Public private partnership |     | N/A |  | | ALL |
|  | Building materials are constantly evolving. Low-carbon, high efficiency materials are becoming more cost effective, and they present an opportunity to support local entrepreneurs that focus on the manufacturing and distribution of these materials. | | | | | | |
| Home energy label ordinance | <ul style="list-style-type: none"> Increased consumer awareness Economic development | Local ordinance |     | N/A |  | Minneapolis, MN | OWN, RENT, SUB |
|  | All home sales and rental leases must disclose the unit's energy report card at time of sale or lease. | | | | | | |
| Residential energy conservation ordinance (RECO) | <ul style="list-style-type: none"> Increased consumer awareness Economic development | Local ordinance |     | N/A |  | Burlington, VT, San Francisco, CA, and Berkeley, CA | OWN |
|  | RECOs require prospective sellers or buyers to perform a set of low-cost energy efficiency improvements. These ordinances could result in 10 - 20% energy savings for the average home. | | | | | | |
| Energy savings competition | <ul style="list-style-type: none"> Increased community awareness | Public private partnership |     | N/A |  | Bozeman, MT, Fargo, ND | OWN, RENT, INNOV, LARGE |
|  | An energy savings competition encourages owners and renters to reduce their energy consumption, all while building momentum and awareness at the ground level for greater energy awareness. | | | | | | |
| Retrofit assistance program | <ul style="list-style-type: none"> Preserve affordable housing Economic development | New local government program |     | N/A |  | Boulder, CO, Minneapolis, MN, Milwaukee, WI, and Dallas, TX | OWN, RENT |
|  | A retrofit assistance program would be a new local government program for homeowners and landlords that provides grants or low-interest rate loans for energy efficiency upgrades. They often include no-sell or affordability covenants to preserve affordability. Programs should be designed in tandem with, and promoted to, low-income residents. | | | | | | |
| Energy efficiency "bulk buy" | <ul style="list-style-type: none"> Economic development | New local government program |     | \$4/MT |  | Ann Arbor, MI | OWN, RENT, SUB, LARGE |
|  | A bulk buy program is when a local government makes a bulk purchase of high efficiency products (heat pumps, LED light bulbs, etc.) and provides them to citizens at a below market cost to fill gaps in existing rebate and incentive programs. | | | | | | |

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| Eco-District | <ul style="list-style-type: none"> National recognition | Public private partnership |     | N/A |  | Minneapolis, MN, Denver, CO, Boston, MA | INNOV |
|  | District-level project that brings together area stakeholders to design and implement ambitious projects with outcomes in equity, resilience, and climate mitigation. Brings a unique branding opportunity with national recognition. | | | | | | |
| Promotion of flagship projects | <ul style="list-style-type: none"> Increased community awareness Marketing opportunity for leaders | Public private partnership |     | N/A |  | Sarasota, FL | INNOV |
|  | Contrasts Eco-Districts by being able to exist city or county-wide, rather than in one neighborhood. Flagship projects may represent a range of “going beyond what’s expected,” such as with a deconstruction plan, all-electric heating and cooling, or reducing embodied carbon. Could be recognized with an online “story map,” recognition placards, or building tours (online or in person). | | | | | | |
| Rental certification program with energy efficiency requirements | <ul style="list-style-type: none"> Increased comfort and health | Local ordinance |     | \$30/MT |  | Ann Arbor, MI | RENT |
|  | Establish a rental property registry and attach energy efficiency requirements to the process of acquiring or renewing a rental property owner’s certificate of occupancy. Provide financial incentives, technical assistance, and flexible compliance pathways to help property owners. Bozeman identified this as a key plan in their most recent climate action plan. | | | | | | |
| Renewable energy for renters | <ul style="list-style-type: none"> Economic development Increase clean electricity supply | Public private partnership |     | N/A |  | Southern California Edison | RENT |
|  | Increase renters’ access to clean energy via Missoula’s 100% clean electricity efforts, specifically a solar-ease expansion, green tariff, or utility owned community solar. Solar-ease expansion can expand focus to landlords and tenants, as well as develop a green lease that helps align tenant and landlord interests. | | | | | | |
| Energy use disclosure ordinance (benchmarking and transparency) | <ul style="list-style-type: none"> Increased data transparency | Local ordinance |     | \$17-46/MT |  | Seattle, WA, Fort Collins, CO, and Philadelphia, PA | LARGE |
|  | Require large building projects to disclose their energy use via an online data portal. This lays the groundwork for higher performance, as well as collects data to inform better decisions. | | | | | | |
| Building energy performance standards (BEPS) | <ul style="list-style-type: none"> Economic development | Local ordinance |     | \$8/MT |  | Reno, NV, St. Louis, MO, Washington state | LARGE |
|  | Sets energy or emissions standards that large multifamily and commercial buildings must meet by a certain date. Typically includes a long term policy goal as well as interim goals that must be met along the way. | | | | | | |
| High performance standards for new buildings via zoning | <ul style="list-style-type: none"> Economic development | Zoning |     | N/A |  | Boston, MA, Cambridge, MA | LARGE |
|  | In contrast to a BEPS, which applies to existing buildings, there is an opportunity to mandate higher performance standards for new buildings via zoning. The City or County could mandate buildings over a certain size adhere to higher performance standards (such as LEED certification or Energy Use Intensity benchmarks). | | | | | | |
| Mandatory retrocommissioning and/or tune-ups | <ul style="list-style-type: none"> Economic development | Local ordinance |     | \$27/MT |  | Seattle, WA, Philadelphia, PA, Los Angeles, CA | LARGE |
|  | Requires large buildings to perform a prescribed set of operations and maintenance improvements designed to reduce building energy use every 5 years. Rather than require a certain standard be met (like BEPS), it requires a set of actions be taken . | | | | | | |
| Voluntary stretch code | <ul style="list-style-type: none"> Increased training | Local adoption of stretch code |     | N/A |  | Santa Monica, CA | LARGE |
|  | A stretch code is a code or alternative compliance path that is more aggressive than base code. The state of Montana allows localities to adopt voluntary stretch energy building codes. They are most effective when paired with incentives. | | | | | | |

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| Density bonus | <ul style="list-style-type: none"> Increased density | Zoning |     | N/A |  | Austin, TX, Seattle, WA | INCENT |
|  | Provides additional density for projects that go beyond base building code. | | | | | | |
| Reduced parking requirements | <ul style="list-style-type: none"> Greater walkability | Zoning |     | N/A |  | Flagstaff, AZ, Denver, CO, State of CA | INCENT |
|  | Allows projects that go beyond base building code to provide fewer minimum parking spaces. | | | | | | |
| Impact and/or permit fees reduced | <ul style="list-style-type: none"> Reduced revenue for local government | Zoning |     | N/A |  | St. Petersburg, FL, San Diego, CA | INCENT |
|  | Reduces impact and permit fees for projects that go beyond base building code. | | | | | | |
| Permit process expedited | | Zoning |     | N/A |  | Albuquerque, NM, Salt Lake City, UT, Chula Vista, CA, Miami, FL | INCENT |
|  | Provides a faster permitting process for projects that go beyond base building code. | | | | | | |
| Property tax abatement | <ul style="list-style-type: none"> Reduced revenue for local government | Zoning |     | N/A |  | Virginia Beach, VA, Cincinnati, OH, Cleveland, OH, Baltimore, MD | INCENT |
|  | Provides partial reduction in property taxes for projects that go beyond base building code. | | | | | | |
| TIF made available | <ul style="list-style-type: none"> Increased conversations about TIF | Missoula Redevelopment Agency |     | N/A |  | Chicago, IL | INCENT |
|  | Makes TIF funding available for projects that go beyond base building code. | | | | | | |