MEETING OVERVIEW

1. Introductions
2. Background of C-CAP
3. Background Information
4. Exercise: Feedback from Group on Draft Objectives, Input on Barriers and Equity Considerations
CITY OF BEND

CITY OPERATIONS
Strategic Energy Management Plan to:
• Become carbon neutral by 2030
• Reduce fossil fuel use for City facilities and operations by
  • 40% by 2030
  • 70% by 2050

COMMUNITY WIDE
Community Climate Action Plan to:
• Reduce fossil fuel use community wide by
  • 40% by 2030
  • 70% by 2050

City Council Resolution No. 3099
• Established Climate Action Steering Committee (CASC) to create
  Community Climate Action Plan (C-CAP)
OVERVIEW OF TIMELINE

October – December 2018: Brainstorming actions with community engagement

January 2019: Community Survey: Feedback on Ideas

February – May 2019: Evaluating actions through triple-bottom-line lens
May 2019
Community Survey: Feedback on final actions

June – August 2019
Implementation Planning: Engage the relevant stakeholders

September 2019
Draft plan to Council
Sector Working Groups

• Led by Climate Action Steering Committee members
• Direct input on barriers, objectives, and equity considerations
• *Brainstorm and create* list of potential climate actions

*Working Groups advise the Climate Action Steering Committee*
BEND COMMUNITY GHG INVENTORY & ENERGY EFFICIENCY IN BUILDINGS
Business As Usual Emissions Forecast

- Stationary Energy
- Transportation
- Waste
- Refrigerants
- Population BAU to 2040
Bend Sector-Based Greenhouse Gas Emissions
776,765 MT CO$_2$e
9.3 MT CO$_2$e per capita

- Residential Energy: 236,270 MT CO$_2$e (30%)
- Commercial Energy: 179,155 MT CO$_2$e (23%)
- Transportation: 257,914 MT CO$_2$e (33%)
- Industrial Energy: 23,581 MT CO$_2$e (3%)
- Industrial Process & Product Use: 42,466 MT CO$_2$e (6%)
- Waste: 37,378 MT CO$_2$e (5%)
GHG Emissions (MT CO2e)

- Residential
- Commercial
- Industrial

- Electricity (Location-Based)
- Natural Gas
- Other Fuels
Bend electricity use (in MWh), by sector. Percent (%) change, FY15-FY17.

Bend natural gas use (in therms), by sector. Percent (%) change, FY15-FY17
<table>
<thead>
<tr>
<th>Emissions Sector / Sub-Sector</th>
<th>FY 16 GHG Emissions (MT CO₂e)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary Energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residential Buildings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity (Location-Based)</td>
<td>127,711</td>
<td>Based on carbon intensity (CI) of regional electric grid</td>
</tr>
<tr>
<td>Electricity (Market-Based)</td>
<td>199,669</td>
<td>Based on CI for local utilities and customer purchase of green energy</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>103,347</td>
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<tr>
<td>Other Fuels</td>
<td>5,212</td>
<td>Includes propane and fuel oil use</td>
</tr>
<tr>
<td>Commercial Buildings and Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity (Location-Based)</td>
<td>116,608</td>
<td>Based on carbon intensity (CI) of regional electric grid</td>
</tr>
<tr>
<td>Electricity (Market-Based)</td>
<td>204,511</td>
<td>Based on CI for local utilities and customer purchase of green energy</td>
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<tr>
<td>Natural Gas</td>
<td>57,229</td>
<td></td>
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<tr>
<td>Other Fuels</td>
<td>5,318</td>
<td>Includes propane and fuel oil use</td>
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<tr>
<td>Industrial Facilities</td>
<td></td>
<td></td>
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<tr>
<td>Electricity (Location-Based)</td>
<td>7,603</td>
<td>Based on carbon intensity (CI) of regional electric grid</td>
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<tr>
<td>Electricity (Market-Based)</td>
<td>16,115</td>
<td>Based on CI for local utilities and customer purchase of green energy</td>
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<tr>
<td>Natural Gas</td>
<td>12,784</td>
<td></td>
</tr>
<tr>
<td>Other Fuels</td>
<td>NE</td>
<td></td>
</tr>
<tr>
<td>Water (energy)</td>
<td>3,195</td>
<td></td>
</tr>
</tbody>
</table>
Figure 4: Detailed summary of sector-based emissions and comparison to emissions from household consumption and fuel production.

Note: Figure 3 presents location-based emissions for electricity. Market-based emissions details are included in Figure 5 and Figure 7.

Note 2: Other Goods include electronics, toys, personal care products, cleaning products, printed reading materials, paper, office supplies, and medical supplies.
CITY BUILDING CODE AND POLICY FRAMEWORK
State of Oregon Building Codes

• 2014 Oregon Structural Specialty Code (Commercial)
• 2017 Oregon Residential Specialty Code 2014
• 2014 Oregon Energy Efficiency Specialty Code
4 Areas of Building Energy

- Envelope
- Mechanical (Heating and Cooling)
- Water Heating
- Electricity (Lighting)
Part I—Commercial Energy provisions

Adopted code: 2018 International Energy Conservation Code (IECC) with Oregon Reach Code modifications

Commentary: For structures covered under the Oregon Structural Specialty Code (OSSC), the 2018 IECC represents an improvement to the 2014 OSSC/2014 OEESC. The 2018 IECC is a contemporary code that advances energy efficiency through a timely evaluation and recognition of the latest advancements in construction techniques, emerging technologies and science related to the built environment. The 2018 IECC is recognized by the U.S. Department of Energy as the most current national energy efficiency construction code.


Adopted code: 2017 Oregon Residential Specialty Code (ORSC), including Chapter 11, with Oregon Reach Code modifications

Commentary: For residential structures covered under the ORSC, the 2017 ORSC exceeds national standards that are technically and economically feasible for residential structures.
<table>
<thead>
<tr>
<th>Climate Zone</th>
<th>All other</th>
<th>Group R</th>
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</thead>
<tbody>
<tr>
<td><strong>Roofs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulation entirely above roof deck</td>
<td>R-20ci</td>
<td>R-20ci</td>
</tr>
<tr>
<td>Metal Buildings</td>
<td>R-13 + R-13</td>
<td>R-19</td>
</tr>
<tr>
<td>Attic and other</td>
<td>R-38</td>
<td>R-38</td>
</tr>
<tr>
<td><strong>Walls, above Grade</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>R-11.4ci</td>
<td>R-13.3ci</td>
</tr>
<tr>
<td>Metal Building</td>
<td>R-13 + R-5.6ci</td>
<td>R-13 + R-5.6ci</td>
</tr>
<tr>
<td>Metal Framed</td>
<td>R-13 + R-7.5ci</td>
<td>R-13 + R-7.5ci</td>
</tr>
<tr>
<td>Wood Framed and other</td>
<td>R-13 + R-3.8ci or R-21</td>
<td>R-13 + R-3.8ci or R-21</td>
</tr>
<tr>
<td><strong>Walls, below grade</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below-grade wall</td>
<td>R-7.5ci</td>
<td>R-7.5ci</td>
</tr>
<tr>
<td><strong>Floors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>R-10ci</td>
<td>R-12.5ci</td>
</tr>
<tr>
<td>Joist/framing</td>
<td>R-30</td>
<td>R-30</td>
</tr>
<tr>
<td><strong>Slab-on-grade floors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unheated slabs</td>
<td>NR</td>
<td>R-10 for 24 in. below</td>
</tr>
<tr>
<td>Heated slabs</td>
<td>R-15 for 24&quot; below</td>
<td>R-15 for 24&quot; below</td>
</tr>
<tr>
<td><strong>Opaque Doors</strong></td>
<td></td>
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</table>
The American Council for an Energy Efficient Economy

### 2016

<table>
<thead>
<tr>
<th>Year</th>
<th>Overall Rank</th>
<th>State</th>
<th>TOTAL Score/Max Possible</th>
<th>Building energy codes and compliance Score/Max Possible</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>California</td>
<td>45/50</td>
<td>7/7</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>Massachusetts</td>
<td>45/50</td>
<td>7/7</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Vermont</td>
<td>40/50</td>
<td>7/7</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Rhode Island</td>
<td>39.5/50</td>
<td>5/7</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>Connecticut</td>
<td>35.5/50</td>
<td>5.5/7</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>New York</td>
<td>35.5/50</td>
<td>7/7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oregon</td>
<td>35/50</td>
<td>6.5/7</td>
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</table>

### 2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Overall Rank</th>
<th>State</th>
<th>TOTAL Score/Max Possible</th>
<th>Building energy codes and compliance Score/Max Possible</th>
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</thead>
<tbody>
<tr>
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<td>Massachusetts</td>
<td>44/50</td>
<td>6/7</td>
</tr>
<tr>
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<td>California</td>
<td>43.5/50</td>
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<tr>
<td>3</td>
<td>3</td>
<td>Vermont</td>
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<td>6.5/7</td>
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<tr>
<td></td>
<td></td>
<td><strong>Oregon</strong></td>
<td><strong>36.5/50</strong></td>
<td><strong>6.5/7</strong></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Rhode Island</td>
<td>36.5/50</td>
<td>5/7</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>Connecticut</td>
<td>35.5/50</td>
<td>5/7</td>
</tr>
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</table>

### 2014

<table>
<thead>
<tr>
<th>Year</th>
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<th>TOTAL Score/Max Possible</th>
<th>Building energy codes and compliance Score/Max Possible</th>
</tr>
</thead>
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<tr>
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<td></td>
<td>Massachusetts</td>
<td>42/50</td>
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<tr>
<td>1</td>
<td>2</td>
<td>California</td>
<td>40.5/50</td>
<td>7/7</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td><strong>Oregon</strong></td>
<td><strong>37.5/50</strong></td>
<td><strong>5.5/7</strong></td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>Rhode Island</td>
<td>37.5/50</td>
<td>6/7</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Vermont</td>
<td>37.5/50</td>
<td>6/7</td>
</tr>
</tbody>
</table>

### 2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Overall Rank</th>
<th>State</th>
<th>TOTAL Score/Max Possible</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td>42/50</td>
<td>5.5/7</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>California</td>
<td>41/50</td>
<td>7/7</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>New York</td>
<td>38/50</td>
<td>5.5/7</td>
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</tbody>
</table>
EXISTING PROGRAMS
Who we are

Energy Trust is an independent nonprofit dedicated to helping 1.5 million utility customers invest in energy efficiency and clean, renewable power.

We provide:

- Information
- Technical services
- Engineering studies
- Cash incentives
- Contractor connections
What we do

548 average megawatts saved

119 aMW generated

45M annual therms saved

Enough energy to power

513,000 homes and heat

89,000 homes for a year

17.4M tons of carbon dioxide avoided
Who we work with
The territories we serve
How to get involved

Start the conversation  Apply for incentives  Request payment
About Incentives for New Construction & Major Renovations
Projects served:
• New construction
• Major renovation
• Tenant build-out
• Additions or expansions
Assistance for all stages of your project

Design
Solar planning
Installation + construction
Completion + post-occupancy
Packaged offers to get you on the right track

Path to Net Zero

Market Solutions
Market Solutions

- Tailored solutions to fit your business
- Good-better-best packages to help with decision making
- Easy step-by-step workbooks
- Upfront incentive estimates
Path to Net Zero

- Increased incentives for early design, technical assistance, installation and post-occupancy
- Technical resources and assistance from start to finish
- Incentives for net-zero certification
IronHorse Lodge

Low-income housing for seniors in Prineville

Path to Net Zero project featuring:
• High-performance envelope and building techniques
• Efficient variable refrigerant flow heating and cooling systems
• Long lived and highly-efficient LED lighting
• Low flow water fixtures

Energy Trust incentives: $125,200
Estimated annual savings:
200,000 kWh & 3,000 therms
Estimated utility cost savings: $10,820/year

“Energy Trust of Oregon held our hand from the get go. They made the whole process, doable, easy, and understandable in terms of what our goal was and how they were going to help us achieve that.”

-Rob Roy, Co-Founder, Pacific Crest Affordable Housing
Thank You

ML Vidas
ml.vidas@CLEAResult.com

Rob Doughtie
robert.doughtie@CLEAResult.com
NeighborImpact Mission:

NeighborImpact supports people and strengthens communities.
NeighborImpact Services

- Child Care Resources
- Early Head Start
- Energy Assistance
- Financial Skills Support
- Food Programs
- Head Start

- Homebuyer Assistance
- Housing Assistance
- Mortgage and Foreclosure Assistance
- Weatherization
**Energy Assistance**

**Purpose:** To provide low income residents assistance with their home energy expenses.

**What kind of energy does it cover?**
- Electricity
- Natural Gas
- Propane
- Oil
- Wood/Pellets

**What is the benefit?**
Energy Assistance provides a one-time payment on behalf of eligible households directly to the utility provider. In some cases and depending on the availability of funding, crisis assistance may be available.

**What is the eligibility criteria?**
- Determined by household size and gross income.
- Income must be less than 60% of State Median Income
- Must reside in Crook, Deschutes or Jefferson counties

**When is the program available?**
Energy Assistance is available beginning on October 1, depending on the availability of funding.
Energy Assistance Program Impact

12,058 individuals received energy assistance between October 1, 2017 and August 9th, 2018.

$2,490,803 in payments made to utilities on behalf of 4,941 qualified low-income households.
The average energy assistance benefit amount is $425.78.

2,220 utility disconnections were prevented.

267 households had their utility service reconnected.

900 households had not received energy assistance previously.

1,644 households have a disabled family member.

1,618 households have a senior family member.

1,094 households have children under the age of six in their family.

372 households have a family member who is a veteran.
Weatherization

**Purpose:** To provide installation of materials which will increase energy efficiency, comfort and durability of homes.

- Detailed energy audit including diagnostic testing (combustion appliance testing, air leakage testing) to assess which measures will save the most energy.
- Use of a computer modeling software to determine how much energy savings will be realized by the homeowner/renter.
- Installation of measures which will save the most energy.
- Addressing health and safety issues to protect installed measures.
Typical Weatherization Measures

Installation depends on the household’s energy use and the needs of the home.

- Air sealing to reduce air leakage and drafts
- Insulation (attic, floors, walls)
- Health & safety repairs (addition of ventilation, minor electric and plumbing repairs)
- Seal and insulate ducts. Verify results with duct blaster test.

- Repair or replace heating source (furnaces, permanent electric heaters, oil & wood stoves, etc.)
- Repair or replace inefficient water heater
- Refrigerator replacement
Weatherization Program Impact

92 homes, with 218 household members, were weatherized between July 1, 2017 and June 30, 2018.

48 of these homes have senior household members.

32 of these homes have disabled household members.

19 of these homes have children aged six and under.

The total energy savings realized in these homes is 2,337 MMBTUs. This is equivalent to 684,907.09 kilowatt hours or 23,370 therms of energy.

The average energy savings per home weatherized is 7,444 kilowatt hours or 254 therms.

The average Oregon home uses 16,324.06 kilowatt hours or 557 therms of energy; the total savings of the energy in these homes can provide energy to approximately 41 homes.
BEST PRACTICES AND OPPORTUNITIES
- Encourage benchmarking and disclosure
- Set energy targets for efficiency and renewable energy
- Green building certification programs
  - LEED
  - Living Building Challenge
  - Earth Advantage
- Develop incentives and partnerships

https://access.living-future.org/case-study/bertschiscience/
Best Practices from Oregon Communities

Ryan LaPoma
Education Manager + Technical Field Consultant
Earth Advantage
Policies & Incentives

• Policy Toolkits
  - Shift Zero
  - BetterBuiltNW
Policies & Incentives

- Policy Toolkits
  - Shift Zero
  - BetterBuiltNW
- Land Use/Code Allowances & Financial Incentives
  - Expedited permitting
  - Density bonuses
  - Floor-area-ratios
  - Setback allowances
  - Solar roof optimization allowances
  - ADU allowances
  - Permits, SDCs, transportation, park, stormwater fees
  - Property tax abatement
  - Loans/rebates/discounts
Policies & Incentives

• Policy Toolkits
  - Shift Zero
  - BetterBuiltNW

• Land Use/Code Allowances & Financial Incentives
  - Expedited Permit Processes

City of Seattle

Hood River County
Policies & Incentives

• Policy Toolkits
  - Shift Zero
  - BetterBuiltNW

• Land Use/Code Allowances & Financial Incentives
  - Expedited Permit Processes

• Public/Private Partnerships
Policies & Incentives

• Policy Toolkits
  - Shift Zero
  - BetterBuiltNW

• Land Use/Code Allowances & Financial Incentives
  - Expedited Permit Processes

• Public/Private Partnerships
Policies & Incentives

• Policy Toolkits
  - Shift Zero
  - BetterBuiltNW
• Land Use/Code Allowances & Financial Incentives
  - Expedited Permit Processes
• Public/Private Partnerships
• Technical Assistance & Training
Energy Labeling & Benchmarking

• City of Portland
  - Home Energy Score (HES) Program
  - Commercial Benchmarking
Energy Labeling & Benchmarking

• City of Portland
  - Home Energy Score (HES) Program
  - Commercial Benchmarking

• City of Eugene
  - Renter subsidized HES pilot
Energy Labeling & Benchmarking

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• Oregon Dept. of Energy
  - Statewide HES framework
Energy Labeling & Benchmarking

• City of Portland
  - Home Energy Score (HES) Program
  - Commercial Benchmarking

• City of Eugene
  - Renter subsidized HES pilot

• Oregon Dept. of Energy
  - Statewide HES framework

• Financing programs
  - FHA, Fannie Mae, Energy Trust of Oregon
Energy Codes

• 2017 Residential Code Update
• 2019 Commercial Code Update
Energy Codes

• 2017 Residential Code Update
• 2019 Commercial Code Update
• Governor's Executive Order

Office of the Governor
State of Oregon

EXECUTIVE ORDER NO. 17-20

ACCELERATING EFFICIENCY IN OREGON’S BUILT ENVIRONMENT TO REDUCE GREENHOUSE GAS EMISSIONS AND ADDRESS CLIMATE CHANGE

WHEREAS, climate change presents a significant threat to our livelihoods, economic security, environment, health, and well-being.

WHEREAS, there has been an increase in extreme weather events, including more frequent and intense heat waves and wildfires. According to the Oregon Climate Change Research Institute and other regional studies, the best available science indicates Oregon is at risk of serious impacts to its natural resources due to climate change.

• Water resources are being affected by decreased winter snowpack, changes to seasonal runoff patterns, decreased precipitation in Eastern Oregon, and increased intensity and occurrence of flooding.
• Agricultural resources are being affected by increases in temperatures.
• Ocean acidification is increasing and there are changes in ocean currents.
• Significant parts of the Oregon coastal region, stretching 363 miles, will be impacted by an expected rise in sea level up to 1 to 4 feet by 2100, incurring billions of dollars of damages and losses to roadways and structures.
• Climate change impacts threaten the State’s agricultural, fishing, timber, recreation, and tourism industries, thereby threatening the livelihood of the State’s residents and an important source of Gross State Product for the state.


Energy Codes

• 2017 Residential Code Update
• 2019 Commercial Code Update
• Governor's Executive Order
• Zero Energy Ready Oregon (ZERO) Coalition

zeroenergyreadyoregon.org
A group of Oregon-based organizations are announcing the formation of a coalition to advance the rapid adoption of zero energy building standards in the state of Oregon.
Growth of Energy Efficient Homes in Central Oregon

- 2015
- 2016: 41% increase
- 2017: increase

2015 2016 2017
Energy Savings

Earth Advantage certified homes in 2017 provided an average energy savings of 27% better than code.
Stone Bridge NW
Electric Vehicle Ready
Thank You

For more information: earthadvantage.org
ENERGY EFFICIENCY IN BUILDINGS DRAFT OBJECTIVES, BARRIERS, AND EQUITY CONSIDERATIONS
1. Increase energy efficiency of new homes
2. Increase energy efficiency of existing homes
3. Increase energy efficiency of new commercial and multifamily buildings
4. Increase energy efficiency of existing commercial and multifamily buildings
5. Support clean and/or renewable energy sources in homes
6. Support clean and/or renewable energy sources in commercial and multifamily buildings
7. Increase equitable access to reliable information, awareness and education
8. Increase support for existing and new training programs at increasing and diversifying skilled workforce
9. Increase access to energy efficiency programs and benefits among renters and income qualifying homeowners
10. Increase efficiency of public agencies facilities, equipment and operations
BARRIERS

• What are the biggest barriers that may prevent us from achieving our objectives?
  i.e. cost, concern about health impacts, alignment with state and federal initiatives
• Barriers may be financial, regulatory, social/cultural, etc.

EQUITY CONSIDERATIONS

• **Accessibility:** does everyone have equal access to the benefits?

• **Disproportionate Impacts:** will this create a larger burden on an already disadvantaged community?

• **Shared Benefits:** will this be beneficial to all members of the community or just a select few?
EXERCISE
• Split into small groups around tables – up to 6 tables total
• Each table should have a facilitator from the CASC or City Staff
• Fill out worksheet with your own ideas on sticky notes
• Provide feedback on:
  • Draft Objectives
  • Barriers
  • Equity Considerations
• Let us know if we missed any objectives
• TIME: 30-45 minutes total
• Brainstorm, ask your friends and networks – what actions should we take?
• Review Pre-Meeting Reading Materials to be Posted on CASC website
  • Energy Efficiency in Buildings White Paper
  • CNCA Framework for Long Term Deep Carbon Reduction Planning Buildings Chapter
  • City of Aspen Greenhouse Gas Reduction Toolkit Energy and Buildings Chapter