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 Council Resolution No. 3044

**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 SUPPLY
Business As Usual Emissions Forecast
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%)
Location Based Emissions: calculated using the regional electricity’s grid GHG intensity and represent the average impacts of electricity use and efficiency effort. Required methodology by reporting protocol.

Market Based Emissions: based on the GHG intensity of electricity contracts with local utilities.
<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><strong>Stationary Energy</strong></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>
<td></td>
</tr>
<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>
</tr>
<tr>
<td>Natural Gas</td>
<td>57,229</td>
<td></td>
</tr>
<tr>
<td>Other Fuels</td>
<td>5,318</td>
<td>Includes propane and fuel oil use</td>
</tr>
<tr>
<td>Industrial Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity (Location-Based)</td>
<td>7,603</td>
<td>Based on carbon intensity (CI) of regional electric grid</td>
</tr>
<tr>
<td>Electricity (Market-Based)</td>
<td>16,115</td>
<td>Based on CI for local utilities and customer purchase of green energy</td>
</tr>
<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**: Other Goods include electronics, toys, personal care products, cleaning products, printed reading materials, paper, office supplies, and medical supplies.
LOCAL ENERGY SUPPLY
Powering our Communities
Greening the Grid
PacifiCorp System Overview

- 1.8 million customers in 6 states
- 63,000 miles of distribution lines
- 16,500 miles of transmission lines
- 900 substations
- 74 generating plants—thermal, wind, hydro & solar
- 12,685 Megawatt (MW) peak demand
- Two Balancing Authority Areas (PACW and PACE)
- Regulated by six state public utility commissions
Planning for the new energy future

Energy Vision 2020 (As incorporated in 2017 IRP)

- Adding 1,000 MW of new solar in 2016-2017
- Adding 1,100 MW of new wind by 2020
- Building new 500 kV transmission
- Repowering existing 950 MW of wind fleet
Community and Corporate Partnerships

• PacifiCorp works with communities and corporations across our service territory that have clean energy goals or action plans.

• Select partnerships:
  • Portland TrailBlazers— partnership matches 100% energy needs with renewable energy credits
  • Facebook data center in Prineville, OR— partnership enabled development of 437 MW of new solar developments
Rethink, Reimagine, Reinvent
• Offering is intended to complement rather than disrupt existing planning activities underway
• Could be bolt-on module to larger climate action planning that specifically addresses one of biggest components – electric energy
• Brings facilitation/stakeholder engagement and planning resources to the table
  • Workshop content and facilitation
  • Community data
  • Plan development
• Opportunity to set up short-term strategies for quick wins on electric energy that show progress toward existing goals set in resolution
• Could be a model to use for other planning efforts (transportation, waste)
Community Action Plan

**Utility**

**WATTSMART ENERGY FACILITATOR**
- Project Management
- Recruitment assistance
- Workshop facilitation
- Plan development
- Technical expertise

**WATTSMART DATA TEAM**
- Baseline energy profile assessment
- Historical DSM program participation
- Uptake of renewable energy
- Goals and Strategy analysis

**Community**

**COMMUNITY ENERGY LEADER**
- Energy championship
- Project management
- Stakeholder recruitment
- Community Energy Plan review

**COMMUNITY PLANNING TEAM**
- Workshop participation
- Technical expertise
- Ambassadors to community
- Assistance in understanding local context and community priorities
Electric Transportation
### Why Go Electric?

**Environmental and Economic Benefits**
- No tailpipe emissions
- $1 per gallon equivalent

<table>
<thead>
<tr>
<th>Incentives</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>$7,500</td>
</tr>
<tr>
<td>Oregon State</td>
<td>$2,500-$5,000*</td>
</tr>
<tr>
<td>Pacific Power/Nissan</td>
<td>$3,000</td>
</tr>
</tbody>
</table>

$29,990 2018 Nissan Leaf = $16,990

*Income Qualifying*
Three Electric Transportation Pilots

- Public Charging
- Grant Funding
- Outreach & Education

www.pacificpower.net/ev
• Planning to install 7 public charging stations around Oregon
• Working with the City of Bend to determine feasibility of different locations
Electric Vehicle Charging Grants

- 1.45M in grant funding for non-residential customers
- 75% of projects will consider educational, environmental, and community benefits
- 25% reserved for fast-track fleet electrification
- Quarterly application cycle through 2019
Blue Sky Renewable Energy
More than 8,100 customers voluntarily support renewable energy through Blue Sky.

Equivalent to 74,884 megawatt-hours in 2017 alone.

Eight community-based renewable energy projects (323 kW) installed in Bend.
**Blue Sky Block**

Sold in 100-kilowatt-hour blocks of wind (50%) and solar (50%) from the Western region. Support of this program may help develop community-based small-scale renewable energy projects.

---

**Blue Sky Usage**

Support a blend of 100% Pacific Northwest renewable resources from Oregon, Washington and Idaho.** The resource mix is likely to include wind (74%), biomass (8%), solar (17%) and geothermal (1%).

---

**Blue Sky Habitat**

Same as Blue Sky Usage and also helps restore and preserve native fish habitats in Oregon via the non-profit organization The Freshwater Trust.
Blue Sky Block

Sold in 100-kilowatt-hour blocks of wind (50%) and solar (50%) from the Western region. Support of this program may help develop community-based small-scale renewable energy projects.

Blue Sky QS

Purchase of more than 101 Blue Sky blocks per month for 12 months (1,212 blocks minimum purchase)

Blue Sky Select

Custom REC pricing for customers who commit to a one year or minimum 75,000 MWh per year.

Blue Sky Large Business Options

(Rate Schedules 28, 30, 41L and 48)
Since 2006 Blue Sky customers have funded

- 113 community projects in 34 communities across Oregon
- 99 solar, 8 wind, 2 geothermal, 2 wave research, 2 hydro, 2 biomass projects
- Nearly 10 MW of generation capacity from small renewable projects!
## Blue Sky Funded Projects in Bend

<table>
<thead>
<tr>
<th>Project Owner</th>
<th>Type of facility</th>
<th>Technology</th>
<th>Size (kW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bend Centennial Parking Plaza</td>
<td>Government building</td>
<td>Solar</td>
<td>33</td>
</tr>
<tr>
<td>Mountain Laurel Lodge</td>
<td>Low-income/affordable housing</td>
<td>Solar</td>
<td>18.36</td>
</tr>
<tr>
<td>W.E. Miller Elementary School</td>
<td>School</td>
<td>Solar</td>
<td>43</td>
</tr>
<tr>
<td>Bend Parks and Recreation District</td>
<td>Public Space</td>
<td>Solar</td>
<td>38.87</td>
</tr>
<tr>
<td>Lava Ridge Elementary School</td>
<td>School</td>
<td>Solar</td>
<td>38.85</td>
</tr>
<tr>
<td>Bend First United Methodist Church</td>
<td>House of worship</td>
<td>Solar</td>
<td>13.8</td>
</tr>
<tr>
<td>Bend Habitat ReStore</td>
<td>Low-income/affordable housing</td>
<td>Solar</td>
<td>56.2</td>
</tr>
<tr>
<td>Bethlehem Inn</td>
<td>Homeless services</td>
<td>Solar</td>
<td>50</td>
</tr>
</tbody>
</table>
TOGETHER, WE CAN MAKE A DIFFERENCE
Business/Member Statistics

• Member-owned not for profit
  • Capital Credits - 2017 Retired
    $2,105,000
  • Average Check Amount was $132

• $247 Million – Total Utility Plant

• $60 Million – Revenue

• 33,853 meters/27,162 members – Oregon’s Largest Electric Co-op
5,300 Square-mile Service Area
CEC Power Supply

- BPA Resources
  - Hydropower – 86.5%
  - Nuclear – 8.8%
  - Small Hydro – .9%
  - Wind – .8%
  - Non Specified – 3%

- Coffin Butte Resources < 1%
Renewable Portfolio Standard

- Small Utilities: < 3 percent of retail electricity sales
- 2025: 5 percent renewables if retail sales are less than 1.5 percent or total Oregon retail sales
- 2025: 10 percent renewables -- between 1.5 percent and 3.0 percent
- CEC → 5 percent renewables, on target
Integrated Resource Planning

• BPA contract thru 2028
  • Preference customers
• BPA gen mix affected thru rate cases and BPA’s Focus 2028 Planning
• Historically: IRP development n/a for Coop
• Evolving approach: EE Growth/Secondary Benefits
• BPA Relationship ➔ front burner ~ 2022/23
Green Programs (or Programs w/ Green Benefits)

Required:
• Green Power: Voluntary Contributions
• Net Metering
• Some EE offerings, e.g. weatherization

Voluntary:
• 16 EE program offerings
  • Energy Challenge Direct Install
• AMI
• Prepay Program
• Community Solar
• Electric Vehicles
Decoupling Program

- Separate energy costs from delivery costs
- Gradual implementation: 2017-2025
- Next change Jan. 2019
- Monthly residential charge: +80%
- Avg. residential kWh charge: -14.3%
- Revenue neutral for co-op
- Clarifies behavior on energy use
Mission:
The aim of Central Electric Cooperative, Inc. is to make electric energy available to its members at the lowest cost consistent with sound economy and good management.

Adopted: 1941

www.cec.coop
ABOUT CASCADE NATURAL GAS CORPORATION (CASCADE)

Cascade delivers natural gas service to approximately 70,000 customers in Oregon. Nearly half reside in Bend.

- **30,491** residential customers
- **4,240** commercial
- **33** core industrial/large volume customers
- **5** transport customers.
MAKING THE BEST USE OF OUR AVAILABLE ENERGY

- Promoting resiliency and reliability
- Consideration for full fuel cycle energy and emissions
- Focus on energy strategy that lets each fuel do what it does best
ANTICIPATED GROWTH IN BEND AND SURROUNDING COMMUNITIES

<table>
<thead>
<tr>
<th>Oregon 20-Year Load Growth by Weather Location</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Redmond (includes Bend)</td>
<td>45.7%</td>
</tr>
<tr>
<td>Pendleton</td>
<td>34.6%</td>
</tr>
<tr>
<td>Baker City</td>
<td>28.9%</td>
</tr>
</tbody>
</table>

Central Oregon expected to see an increase in growth due in part to Bend’s urban growth plan which is projected to allow for the development of 2,380 acres of land.
MEETING CUSTOMER DEMAND

Cascade uses population and employment projections for Bend to accurately capture growth trends for the Bend area in its load forecast and cost-effectively meet demand.

Bend’s growth rate is currently 52%.

- **December 1, 2017**, Cascade purchased 10,000 dth/day of incremental upstream transport to serve central Oregon.

- **October 9, 2018**, Cascade’s Gas Supply Oversight Committee authorized the acquisition of supplemental NWP and GTN capacity to help address growth in central Oregon.

- Per Cascade’s 2018 OR Integrated Resource Plan, there are three large distribution system projects to be completed in Bend over the next several years.

- Multiple smaller distribution system projects will also be completed in Bend.
OREGON DSM DELIVERY

- Cascade targets DSM savings of approximately 11.86 million therms in Oregon over the 20-year planning horizon in partnership with Energy Trust.

- Programs funded through a public purpose charge, which applies a percentage charge to customers’ bills.

- Cascade also partners with Oregon Community Action Agencies (CAAs) to provide whole-home weatherization services to qualified customers.
INFLUENCING FACTORS

- Avoided cost forecasts are used to establish a cost-effective threshold for demand side resources.

- If demand side resources cost as much as or less than the avoided cost, the resource is deemed cost-effective.

- Externalities including CO² emissions prices, cost adders, carbon policy, and supply costs impact avoided costs.

- Code changes, cost-effectiveness exemptions, and changes in avoided cost and valuation methodologies impact DSM offerings.
BIOGAS AND RENEWABLE NATURAL GAS

- Cascade continues to explore the viability of biogas and RNG

- Reliability and cost-effectiveness of the Company’s natural gas supply remains a priority

- Rigorous quality standards are necessary to maintaining the safety and reliability of the gas entering the pipeline

- Preliminary discussions with developers have identified biogas/RNG resources available at $30/dth, which is not economically viable at this time

- Recovery of cost-effective utility investments in RNG infrastructure essential to integration of RNG
SCHEDULE 800: BIOMETHANE RECEIPT SERVICES

- Establishes terms and conditions for eligible producers to inject qualifying biomethane on the Company’s distribution system

- Applies to biomethane from agricultural byproducts; wastewater; landfill waste; or food and beverage waste

- Biomethane Producer must secure end users that are Company’s customers and agree to purchase all the estimated biomethane production
**SUMMARY**

- Cascade is pleased to support the efforts of the Bend CASC in making the greatest use of our natural resources.

- Looking towards win-win solutions to streamline energy use while maintaining reliability.

- Continued exploration of RNG/Biogas viability and ability to recover costs.

- Cost recovery/cost-effectiveness will continue to be major factors influencing natural gas fuel mix.
QUESTIONS?

Al Spector (206) 310-1120; alyn.spector@cngc.com
EXISTING PROGRAMS, OPPORTUNITIES AND BEST PRACTICES
Renewable Energy Programs in Central Oregon
Residential solar incentives

1. Cash incentive from the Energy Trust of Oregon: $0.45/W up to $3,600.

2. Federal Tax Credit: 30% Out of pocket cost
Commercial solar incentives

1. Cash incentive from the Energy Trust of Oregon
   - 0 - 15 kW: $0.35/W
   - 15 – 200 kW: $0.35-$0.20/W

2. Federal Tax Credit
   - 30% Out of pocket cost

3. Depreciation
   - Accelerated depreciation (MACRS)

4. Grants
   - Blue Sky – Pacific Power
   - Renewable Energy Development – Oregon Dept. of Energy
Commercial renewable incentives

1. Biopower
   Water resource recovery facilities, dairies, food waste, wood waste

2. Hydropower
   Irrigation canal piping, municipal pressure reduction valves

3. Geothermal
   Depends on the geothermal resource of the site

4. Wind
   Not recommended for most areas within Pac Power territory
Community Solar

Overcoming Obstacles
Shading, roof capacity, renters, financing, up-front cost

The Framework
Final rules still being developed by the OPUC
Program Administrator has been selected
Pac Power territory
Interim bill credit rate equal to residential retail rate
72 MW available in Pac Power territory
Minimum project size of 25kW, max 3 MW
10% of each project reserved for low income
Community Choice Aggregation

Local energy model, authorized by State statute, that allows cities, counties or groups of them to aggregate their electric load for the purpose of procuring power that is cheaper and greener than that provided by the investor-owned utility.

Not currently allowed in Oregon, but groups are organizing to start working on this.
Oregon Department of ENERGY

Senate Bill 334
Biogas and Renewable Natural Gas Inventory (2017)

City of Bend

October 24, 2018

Michael S. Graham
Energy Research Analyst
Goals of SB 334

1. Locate and estimate the statewide biogas and RNG resource potentials
2. Assess commercial and near-commercial technologies for producing, cleaning/upgrading, and utilizing biogas and RNG
3. Estimate potential air pollution and GHG reduction potentials
4. Assess potential markets for RNG
5. Assess economics of biogas and RNG supply chains
6. Pinpointed barriers, draft and submit recommendations on behalf of the ODOE-appointed advisory committee
Biogas Fuel Production Pathways

**Anaerobic Digestion**
- Food Waste
- Landfills
- Animal Manures
- Municipal Wastewater

**Thermal Gasification**
- Forest Harvest Residuals
- Agricultural Harvest Residuals

**Other Near-Commercial Technologies**
- Power to Gas
- PyroCatalytic Hydrogenation
- Hydrothermal Liquefaction
## State and Deschutes County RNG Potentials

<table>
<thead>
<tr>
<th>Fuel Production Pathway</th>
<th>State of Oregon Potential</th>
<th>Deschutes County Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cubic Feet of Methane</td>
<td>Cubic Feet of Methane</td>
</tr>
<tr>
<td>Wastewater Treatment Plants</td>
<td>1,225,228,606</td>
<td>33,417,094</td>
</tr>
<tr>
<td>Food Waste</td>
<td>138,571,656</td>
<td>2,606,974</td>
</tr>
<tr>
<td>Landfills</td>
<td>4,351,052,420</td>
<td>231,842,160</td>
</tr>
<tr>
<td>Agricultural Manures</td>
<td>4,639,626,825</td>
<td>22,205,100</td>
</tr>
<tr>
<td><strong>Anaerobic Digestion Subtotal</strong></td>
<td><strong>10,354,479,507</strong></td>
<td><strong>290,071,328</strong></td>
</tr>
<tr>
<td>Forestry Residuals</td>
<td>16,998,108,771</td>
<td>115,433,822</td>
</tr>
<tr>
<td>Agricultural Residuals</td>
<td>22,686,775,137</td>
<td>22,205,100</td>
</tr>
<tr>
<td><strong>Thermal Gasification Subtotals</strong></td>
<td><strong>39,684,883,908</strong></td>
<td><strong>137,638,922</strong></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>50,039,363,416</strong></td>
<td><strong>427,710,250</strong></td>
</tr>
</tbody>
</table>
Potential RNG Markets

**Oregon** Clean Fuels Market *(8/8/18)*
- Current Price of $91.53/MT CO2e

**California** Low Carbon Fuels Standard *(8/8/18)*
- Current Price of $179/MT CO2e

**Federal** U.S. EPA Renewable Fuel Standard RIN
- Current Price varies by type (D3, D5, D7)

**International** British Columbia Carbon Tax *(2018)*
- Current Price of $35/MT CO2e

---

**Oregon Consumption of RNG as a Transportation Fuel (2016-2017)**

- **Source:** Oregon DEQ Clean Fuels Program
Air Pollution and GHG Reductions

RNG as an Alternative Stationary Fuel

- About 2 Million metric tonnes of fossil fuel-related emissions would be prevented if Oregon’s RNG potential were realized and utilized to displace fossil natural gas.
- Combustion emissions would remain the same since renewable and fossil natural gas are molecularly identical.

RNG as an Alternative Transportation Fuel

Using only Oregon’s RNG potential from Anaerobic Digestion pathway sources:

- **Reductions of 20%** or more for GHG’s, CO2, and fine particulate matter (PM2.5 and PM10)
- **Reductions of 30%** or more for Organic Carbon
Highlights of the Identified Barriers

1. Natural gas companies are currently not allowed to buy and sell RNG to and for their customers.
2. Local gas distribution companies are not currently allowed to recover pipeline interconnection costs through their rates.
3. A lack of natural gas transportation fueling infrastructure.
5. A lack of financial incentives to help drive the nascent industry forward.

1. Allow the natural gas companies to buy and sell RNG to and for their customers.
2. Allow local gas distribution companies to recover pipeline interconnection costs through their rates.
3. Study how best to expand natural gas transportation fueling infrastructure.
4. Explore development of voluntary gas quality standards for injection of RNG into the natural gas pipeline.
5. Explore financial incentives to help drive the nascent industry forward.
BEST PRACTICE THEMES – OTHER CAPS

- Decarbonizing the centralized electricity grid
  - Cities aggregating demand for renewables
  - Cities setting renewable electricity targets
  - Cities working with utilities and regulators
  - Transitioning buildings and transportation to electricity
- Investing in distributed renewables
- Grid Modernization
  - Smart grids, advanced metering infrastructure
  - Automated demand management
  - Improved storage

ENERGY SUPPLY DRAFT OBJECTIVES, BARRIERS, AND EQUITY CONSIDERATIONS
1. Establish Bend’s role in accelerating the achievement of the Oregon RPS goals
2. Identify, develop and grow a market-driven renewable energy economy in Bend
3. Reduce costs of renewable energy
4. Improve accessibility to renewable energy in Bend for all residents
5. Optimize the energy portfolio in Bend
6. Reduce energy demand and consumption and Bend
7. Invest in local infrastructure to meet energy supply goals
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
BEFORE NEXT MEETING

• Brainstorm, ask your friends and networks – what actions should we take?
• Review Pre-Meeting Reading Materials to be Posted on CASC website
  • Energy Supply White Paper
  • CNCA Framework for Long Term Deep Carbon Reduction Planning Energy Supply Chapter
  • City of Aspen Greenhouse Gas Reduction Toolkit Energy and Buildings Chapter

NEXT MEETING: TUESDAY, NOVEMBER 6