Resilient Efficient Buildings Task Force

3:00-5:00 pm
July 12, 2022

Existing Building Policies

- Building performance standards
- Benchmarking and disclosure
- Change Energy Trust of Oregon's mission
- Align energy efficiency programs with state's climate goals
- Building electrification study
- Further enhance the efficiency of appliances and equipment
- Advanced Metering Infrastructure (AMI)
- Hybrid vs. all-electric model
- Enacting residential PACE
- Promote heat pumps
- Promote energy-efficiency and heating/cooling upgrades
- Promote, incentivize, and/or subsidize air purification systems
- Upgrades to and increasing supply of affordable housing

Reflection Questions

- How could this policy be applied in Oregon?
- Could this policy complement current Oregon programs?
- What aspects of this policy are the most/least important to you?
- Could this be paired with another policy to increase its effectiveness?

Categorization of Policy Suggestions

Building Type	New or Existing Buildings
Sector	Residential, Commercial, or Institutional/Public Buildings
Policy Subcategory	Envelope, Heating/Cooling, Renewables, Electric, Consumer Products, or Other
Additional Benefits* ***As categorized by Senate Bill 1518, 2022**	Energy Efficiency; Resilience Against Climate Change; Public Health and Air Quality; Reducing Percentage of Household Income that goes Toward Energy Costs; and Mitigating Displacement and Other Impacts that Result from Wildfires, Heat Waves and Other Climate Change Events

Building Performance Standards (BPS)

Task Force Member Policy Suggestions

- Statewide building performance standards for commercial buildings like WA's, including **renter protections** (if the BPS includes multi-family units) and including provisions for **campuses of buildings** (e.g., hospitals) to allow **flexibility**.
- Ensure **no pre-emption** for local action (e.g., Build/Shift).
- Require full **lifecycle cost analysis** prior to any energy upgrades in **public buildings**.
- Promote efficiency in existing buildings through a BPS, create **early adopter incentive funds** with **workforce development language**.
- Performance standards for existing buildings, tiered to create a strong **incentivize** to replace hot water heaters, HVAC systems, and other major appliances with much more efficient models.
- Require any efficiency upgrade or retrofit decision for new or existing public buildings to be based on **lowest first cost and lowest operating cost**.
- Focus on **whole building performance** at the meter.

Building Performance Standards

Establishes specific **performance levels** that buildings must achieve. Designed to **target improvements** in a variety of building aspects—including energy use, water use, and emissions.

Building Type	Existing Buildings
Sector	Commercial, Multifamily, or Public Buildings
Policy Subcategory	Envelope, Heating/Cooling, Renewables, Electric, Consumer Products
Additional Benefits	Economic; Jobs; Public Health and Air Quality*

Building Performance Standards

- Program Design Considerations
- Effect on New Construction
- Complementary Programs

- Task Force Discussion of Building Performance Standards

Benchmarking and Disclosure

Task Force Member Policy Suggestions

- Require **mortgage lenders** to provide an **energy and climate disclosure** form to any borrower. The disclosure form would identify operational cost of energy and its related greenhouse gas (GHG) emissions as an important consideration. The disclosure form would also provide information about the HUD, Fannie Mae and Freddie Mac mortgages that can be used to finance energy and resilience improvements as part of any mortgage origination.
- To ensure emissions benefits are not overstated, use **actual use vs. modeled energy use**. Furthermore, compare savings of electric heat pumps and gas furnaces in cold and peak heating conditions in Portland General Electric (PGE) and PacifiCorp territories instead of modeled assumptions to ensure emissions benefits are realized.
- Pursuant to the Task Force mission, require a **source-based evaluation** of building energy use when modeling efficiency.

Benchmarking and Disclosure

Benchmarking and disclosure is a **market-based** policy tool used to increase building energy performance awareness and transparency.

Building Type	Existing Buildings
Sector	Commercial, Residential, or Public Buildings
Policy Subcategory	Envelope, Heating/Cooling, Renewables, Electric, Consumer Products
Additional Benefits	Reducing Percentage of Household Income that goes Toward Energy Costs*; Jobs

Benchmarking and Disclosure

- Measuring
- Disclosure
- Program Design Considerations
- Program Examples

- Task Force Discussion of Benchmarking and Disclosure

Change Energy Trust of Oregon's Mission

Task Force Member Policy Suggestions

- Change Energy Trust of Oregon's (ETO) mission to **lead with greenhouse gas (GHG) emissions reductions and equity** instead of leading with fuel-neutral energy efficiency.
- Need to make **changes to performance-based standards** and ETO's mission so they are standardized and simplified.
- Direct the PUC to **consider GHG reduction** in Energy Trust/utility conservation programs.
- ETO programs should be made **available statewide**.
- **Remove barriers to customer choice** through ETO funds and other programs that provide efficiency incentives to replace bulk fuels with a more efficient electric system (rather than a forced switch)

Change Energy Trust of Oregon's Mission

Change the Energy Trust of Oregon's (ETO) mission to help utility partners and their customers acquire cost-effective energy efficiency and install small-scale renewable energy projects.

Building Type	New or Existing Buildings
Sector	Commercial, Residential, or Public Buildings
Policy Subcategory	Envelope, Heating/Cooling, Renewables, Electric, Consumer Products
Additional Benefits	Co-benefits would vary based on how the metric is included with existing requirements.

Change Energy Trust of Oregon's Mission

- Energy Trust of Oregon's Current Mission and Funding
- Energy Trust of Oregon's Service Area
- Greenhouse Gas Emission Reductions

- Task Force Discussion of Changing Energy Trust of Oregon's Mission

Align Energy Efficiency Programs with State's Climate Goals

Task Force Member Policy Suggestions

- **Align** energy efficiency programs with **state climate goals**.
- Legislate the **executive order**.
- Legislate the **energy use targets in code** that are in the Executive Order 20-04.

Align Energy Efficiency Programs with State's Climate Goals

Enact Executive Order 20-04 which directed state agencies to take certain actions to reduce and regulated GHG emissions in statute.

Building Type	New or Existing Buildings
Sector	Commercial, Residential, and Public Buildings
Policy Subcategory	Envelope, Heating/Cooling, Renewables, Electric, Consumer Products
Additional Benefits	Statutory consistency

Align Energy Efficiency Programs with State's Climate Goals

- Current Statutory GHG Emission Goals
- Background on EO 20-04

- Task Force Discussion of Aligning Energy Efficiency Programs with State's Climate Goals

Building Electrification Study

Task Force Member Policy Suggestions

- Maryland required Public Service Commission and Building Codes Administration to study and make recommendations on the electrification of buildings.

Building Electrification Study

Building electrification, where fossil fuel–based energy systems are replaced by electricity, has been found by some states to be the lowest-cost and primary building-decarbonization strategy.

Building Type	New or Existing Buildings
Sector	Commercial, Residential, or Public Buildings
Policy Subcategory	Renewables; Electricity
Additional Benefits	Co-benefits will vary based on the policy options chosen from the results of a building electrification study.

Building Electrification Study

- Studying various pathways to achieve building electrification in different timeframes can demonstrate what is feasible in terms of cost, resources, and technological innovation, among other factors.
- Example: Energy + Environmental Economics. Maryland Building Decarbonization Study. (2021).

- Task Force Discussion of a Building Electrification Study

Further Enhance the Efficiency of Appliances and Equipment

Task Force Member Policy Suggestions

- Electric baseboard heating in new and existing building stock. It continues to be the primary source of electric heating, primarily in lower-income houses, and has twice the emissions and operation cost.
- **Looking at older homes**- over the next 20 years, everyone will have to put in a new heating system because they don't last longer than that. The people who build those new systems (and markets) to incentivize lower carbon models to replace old ones after their natural lifespan.
- Increase the energy efficiency of existing buildings through **retrofits.**
- Reduce the amount of household income that goes toward energy costs in Oregon lends itself to specifically looking at older homes. New construction shouldn't be the focus.
- Look at **appliance standards** in the context of natural replacements. Without any additional incentives this could help change in the background the makeup of energy using appliances.
- Create a Zero NOx Appliance Standard.
- Allow federal standards to regulate appliances.
- Use data systems to use energy more efficiently in public buildings, similar to modeling done by Portland State University

Further Enhance the Efficiency of Appliances and Equipment

The Northwest Power and Conservation Council estimates that the cumulative energy generated through energy efficiency and improvements since 1978 is enough to meet the energy needs of approximately 5.1 million homes in the Northwest.

Building Type	New or Existing Buildings
Sector	Commercial and Residential Buildings
Policy Subcategory	Consumer Products
Additional Benefits	Economics; Health; Energy Efficiency*

Further Enhance the Efficiency of Appliances and Equipment

- Oregon has designated several programs to encourage energy efficiency and conservation.
- Examples:
  - Oregon Energy efficiency standards
  - Oregon Heat Pump Deployment Program and Fund (Senate Bill 1536, 2022)
  - Portland State University energy performance analysis
- Task Force Discussion of Further Enhancing the Efficiency of Appliances and Equipment

Advanced Metering Infrastructure (AMI)

Task Force Member Policy Suggestions

- Follow California's lead on adopting **smart appliance standards** which require all new appliances to be smart-enabled in order to take advantage of time-of-use rates and programs from utilities.
- Create a "smart appliance" standard.
- Follow California's lead on creating an online database of **all time-of-use rates** and time-of-use carbon emission factors so that 3rd-party vendors can help utilities and ratepayers make better decisions.
- Use **technology** to manage consumption.

Advanced Metering Infrastructure (AMI)

AMI creates communication channels between utilities and customers by integrating smart meters, data management systems, and communication networks.

Building Type	New or Existing Buildings
Sector	Commercial, Residential, or Public Buildings
Policy Subcategory	Envelope, Heating/Cooling, Renewables, Electric, Consumer Products
Additional Benefits	Economic/Reducing Percentage of Household Income that goes Toward Energy Costs*; Resilience

Advanced Metering Infrastructure (AMI)

- Residential or commercial customers can voluntarily enroll in a **demand-response program** to adjust their energy usage with, for example, smart thermostats or water heaters, to avoid peak usage periods and increase efficiencies.
- Examples
  - House Bill 2062 (2021)
- **Time-of-use (TOU) rates** help align the costs of electricity supply and demand by pricing electricity differently by the time of day and alerting consumers to those costs.

- Task Force Discussion of Advanced Metering Infrastructure (AMI)

Hybrid vs. All-Electric Model

Task Force Member Policy Suggestions

- Compare Hybrid Model to All-Electric Model similar to Énergir and Hydro-Québec's hybrid rate/tariff gas electric approach to decarbonizing buildings.
- Look at **hybrid model** verses and all-electric model.
- Consider benefit of the compounding effect of **emissions saved** today for hybrid heating.

Hybrid vs. All-Electric Model

Buildings can be electrified using dual-energy, or hybrid, systems, where fossil fuel (e.g., natural gas) is replaced with electricity, but can still be used as back-up power during very cold weather or when there are peak demands on the electric system.

Building Type	New or Existing Buildings
Sector	Commercial, Residential, or Public Buildings
Policy Subcategory	Heating/Cooling, Electric, Consumer Products
Additional Benefits	Reducing Percentage of Household Income that goes Toward Energy Costs*; Resilience

Hybrid vs. All-Electric Model

- Example
- In Québec, Canada, Hydro-Québec and Énergir, are using a hybrid-fuel model to phase out the use of natural gas and replace it with renewable hydropower electricity and other renewable energy sources.

- Task Force Discussion of Hybrid vs. All-Electric Energy Models

Enacting Residential PACE

Task Force Member Policy Suggestions

- Support expansion of PACE financing
- Enact residential PACE financing

Property assessed clean energy (PACE) is a financing model:

- type of land-secured financing district (or similar municipal bond mechanism)
- repaid through a property owner's tax bill
- implemented at the city or county level

Enacting Residential PACE

Building Type	New or Existing Buildings
Sector	Commercial or Residential Buildings
Policy Subcategory	Envelope, Renewables, Appliances, Heating/Cooling, Hot Water, Electric
Additional Benefits	Increase condition/value of the building stock; energy efficiency; If coupled with certain elements: resilience against climate change*; Public health and air quality*.

Enacting Residential PACE

- Energy or eligible projects are funded through the financing program
- Assessments are attached to the property
- Example
  - PropertyFit is a commercial PACE program in Multnomah County
  - Seismic retrofits coupled with energy upgrades

- Task Force Discussion of Enacting Residential PACE and/or expanding PACE financing

Promote Heat Pumps

Task Force Member Policy Suggestions

- High-efficiency heat pump and water heater incentive programs.
- Subsidize high-efficiency heat pumps for cost-effective heating and cooling for previously underserved communities. The cooling availability will also represent a resiliency strategy regarding dealing with increased heat and smoke.
- Vast expansion of efficient heat pump incentives—pair these with efficiency/weatherization programs so that upgrades to existing homes can happen all at once (which will save money).
- Provide incentives for heat pump water heaters to make the first cost equivalent to resistance units and allow the incentive to be acquired even if the heat pump water heater is replacing a combustion unit.
- Plan for incentives for gas heat pumps for space and water heating in new and existing buildings, especially for retrofitting existing gas equipment – allowing a leap from federal minimum efficiency to industry maximum efficiency.
- Provide a fund or incentives for heat-recovery ventilation, especially for ductless heat pump systems that don't offer ventilation as a product feature.
- Fund a statewide wood-stove changeout program that targets uncertified stoves.
- Incentivize program to replace oil space heat in the moderate- to low-income and rental markets.

Promote Heat Pumps

- heat pumps transfer heat
- Types:
  - air-to-air, water source, and geothermal
  - hybrid heat pump systems may be combined with a gas furnace

Building Type	New or Existing Buildings
Sector	Commercial or Residential Buildings
Policy Subcategory	Heating/Cooling, Hot Water
Additional Benefits	Resilience*; equity; energy efficiency*; economic savings; public health and air quality*

Promote Heat Pumps

- Oregon's Heat Pump Deployment Program (SB 1536)
  - Grants, funds
  - rebates for rental housing upgrades

- Examples
  - Colorado, SB22-051, 2022
    - Tax credit and sales tax exemption

- Task Force Discussion of Promoting Heat Pumps

Promote Energy Efficiency and Heating/Cooling Upgrades

Task Force Member Policy Suggestions

- Provide incentives for high-efficiency cooling units for renters.
- Incentivize replacement of 80% furnaces with 95% furnaces (which are equivalent to a 9.5HSPF or 278% efficient heat pump) in existing buildings.
- Incentivize bundling of upgrades to high-efficiency furnaces and water heaters together in existing buildings.
- Fund masonry, site-built woodburning fireplace changeout to lower emissions and improve air quality.
- Develop a fund and a program to replace electric resistance heating targeting low-income households.
- Incentivize and subsidize energy efficiencies in existing buildings built before 2010.

Promote Energy Efficiency and Heating/Cooling Upgrades

Task Force Member Policy Suggestions Cont...

- Make sure no new gas furnaces below 94 or 96% efficiency are installed or at least that they aren't inefficient.
- Provide free window and door weatherization kits to low-income communities.
- Create an energy efficiency resiliency fund. Prioritize repairs and upgrades with the greatest carbon reduction ROI. Prioritize those repairs or upgrades that last the life of the building vs. heating or water heating equipment that has a much shorter end of life.
- Eliminate barriers to customer choice in all agency incentive programs – allow for efficiency dollars to be spent on high-efficiency electric appliances so customers aren't forced to keep fossil fuel appliances.

Promote Energy Efficiency and Heating/Cooling Upgrades

- Space heating, space cooling, and water heating - large energy use
- Energy-efficient installation
  - weatherization and energy efficiency upgrades and retrofits

Building Type	Existing Buildings
Sector	Commercial, Residential, or Public Buildings
Policy Subcategory	Heating/Cooling, Envelope
Additional Benefits	energy efficiency*; energy peak demands; costs/reducing percentage of household income that goes toward energy costs*; greenhouse gas mitigation

Promote Energy Efficiency and Heating/Cooling Upgrades

- Range of options:
  - home heating and cooling systems
  - programmable thermostats
  - air sealing, equipment maintenance, minimizing duct losses
  - installation of energy-efficient windows and doors
  - daylighting, shading, and ventilation
- Examples
  - Washington - CEEP and Washington Weatherization
  - Colorado, SB22-051 and Energy Smart Colorado
- Task Force Discussion of Promoting Energy Efficiency and Heating/Cooling Upgrades

Promote, Incentivize, and/or Subsidize Air Purification Systems

Task Force Member Policy Suggestions

- Promote, incentivize, and/or subsidize air purification systems

Promote, Incentivize, and/or Subsidize Air Purification Systems

- Exposure to poor indoor air quality
  - negative health impacts for vulnerable groups such as children, young adults, and older adults.
- Research has shown disparate impacts on various communities.

Building Type	New or Existing Buildings
Sector	Commercial, Residential, or Public Buildings
Policy Subcategory	Heating/Cooling, Envelope
Additional Benefits	Public Health and Air Quality*

Promote, Incentivize, and/or Subsidize Air Purification Systems

- indoor air quality strategies include:
  - source control, improved ventilation, and air cleaners.
- Examples
  - In Oregon, HB 2842 (2021) established the Healthy Homes Program
  - Colorado HB 22-1362 (2022) established the Clean Air Building Investments Fund for High-Efficiency Electric Heating and Appliances Grant program
- Task Force Discussion of Promoting, Incentivizing, and/or Subsidizing Air Purification Systems

Upgrades to and Increasing Supply of Affordable Housing

Task Force Member Policy Suggestions

- Create a pilot for climate resilience hubs—public spaces with solar and storage microgrid tech, electric heat pumps (for cooling), and greenspace. Should be accessible for low-income, aging, and BIPOC communities.
- Establish Environmental Justice Hubs.

Upgrades to and Increasing Supply of Affordable Housing

- remediation of low-quality and condemned properties
- transition of housing stock into affordable housing
- providing land banking and land trust strategies
- financing energy improvements in single- or multi-family

Building Type	New or Existing Buildings
Sector	Commercial, Residential, or Public Building Requirements
Policy Subcategory	Envelope, Heating/Cooling, Renewables, Electric
Additional Benefits	Public Health and Air Quality*; Equity; Resilience Against Climate Change*; Reducing Percentage of Household Income that goes Toward Energy Costs*

Upgrades to and Increasing Supply of Affordable Housing

- Energy improvements may include:
  - efficiency improvements, electric measures, and renewable energy systems
  - for existing homes, existing rental units, and new housing construction.
- Examples
  - Oregon, HB 2842 established the Healthy Homes Program
  - Strong Communities and Affordable Housing Colorado
  - California AB 1087 - Environmental Justice Community Hubs Program
- Task Force Discussion of Upgrades to and Increasing Supply of Affordable Housing

Questions?