

CHAPTER 7: PROTECTING CONSUMERS

Policy and technology advancements are important to continued progress in the energy sector. All Oregonians should benefit from the changes in the energy sector, with an equitable distribution of costs. Oregon has a long history of consumer protection that is more important than ever as our energy systems evolve. The state has placed an increased focus on equity — and through intentional engagement with communities, the state can make meaningful, well-informed decisions to ensure clean, affordable energy is accessible to all Oregonians.

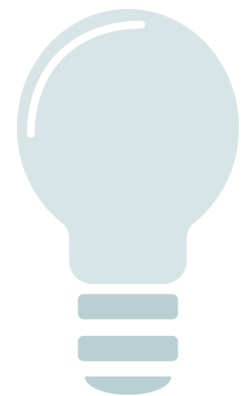


KEY TAKEAWAYS

- The concept of **consumer protection** has been a part of the provision of energy for almost a century, but there continue to be challenges faced by energy-burdened consumers and interest in securing more equitable outcomes in energy-related policies and programs.
- An Oregonian is considered “energy burdened” when their household’s energy-related expenditures exceed six percent of their household income. Studies analyzing energy burden typically use household income and utility bills and other home energy costs to do the calculation, however, **energy-burdened households** can also incur other energy-related expenses, such as transportation fuel. In addition, federal, state, and utility programs and policies mitigate energy burden, but there are currently no policies and programs that comprehensively address energy burden from multiple energy sources.
- A better understanding of the **distribution of benefits and burdens** of electricity, heating, and transportation programs and costs for all Oregon residents is needed. This type of comprehensive analysis could inform policies and pathways to achieve the state’s environmental and climate change policy objectives while addressing energy burden and equity issues. In particular, as rapid changes in technologies and policies in the energy sector continue, close attention to changes in the distribution of benefits and burdens is needed to ensure equity for all Oregon consumers. To accomplish these objectives, more and better data is needed on how the provision of energy affects public health and people of different demographic characteristics and income levels.

Oregon’s energy sector has been and continues to be shaped by technological advancements and leading-edge policymaking. As other parts of this report detail, innovations in key areas such as energy efficiency and renewable energy have resulted in dramatic changes to our energy landscape. The pace of change shows no signs of slowing down, and that holds great promise for Oregon as the state moves toward cleaner energy resources, improved energy efficiency and technologies, and a cleaner transportation system.

While these advancements and innovations are important progress, we must also make sure that all Oregon residents benefit from the changes in the energy sector and that there is an equitable distribution of costs. Oregon has a long history of consumer protection that is more important than ever as our energy systems evolve. More recently, the state has placed an increased focus on equity, which, combined with tools to reduce household energy burdens, can help the state make meaningful, well-informed decisions to ensure clean, affordable energy is accessible to all Oregon residents. Additional analyses and data gaps must be filled as our energy systems are transformed, including data about demographic characteristics, energy costs, public health, and access to new programs and emerging energy technologies.



Energy Burden

A household can be energy-burdened when their energy-related expenditures exceed six percent of their income.¹ In this case, energy burden is calculated by using the percentage of household income spent on home energy, such as utility bills and other heating costs.

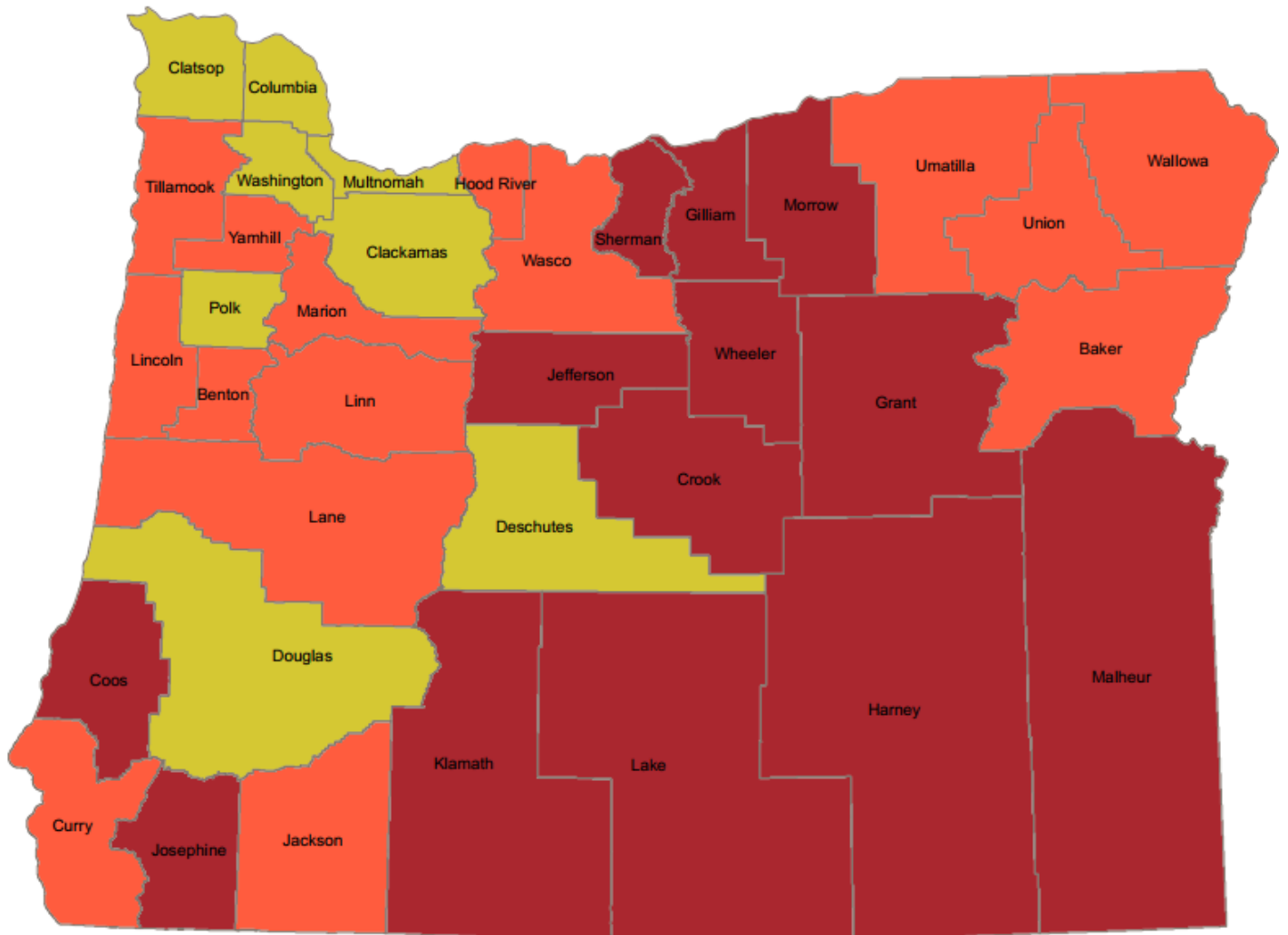
Energy burden involves two key components: energy costs and income. Programs to alleviate energy burden commonly use income thresholds based upon state median income and federal poverty level to determine eligibility. Table 7.1 uses Oregon Housing and Community Services Department (OHCS) income eligibility guidelines and shows when households may be eligible for both energy and weatherization assistance programs.

Table 7.1: U.S. Median Household Income and Poverty Levels²

Weatherization Assistance Program		Energy Assistance Programs
At or below 200% of Federal Poverty Level		At or below 60% of State Median Income
Annual Income	Household Size	Annual Gross Income
\$24,280	1	\$24,550
\$32,920	2	\$32,103
\$41,560	3	\$39,657
\$50,200	4	\$47,210
\$58,840	5	\$54,764
\$67,480	6	\$62,317
\$76,120	7	\$63,734
\$84,760	8	\$65,150
\$93,400	9	\$66,566
\$102,040	10	\$67,983
\$110,680	11	\$69,399
\$119,320	12	\$70,815
\$8,640	Each additional family member	\$1,416

There are 1,603,635 total households in Oregon.³ According to OHCS, approximately 396,182, or about 25 percent of all households, are considered energy-burdened because of their energy-related expenditures. Figure 7.1, a map of Oregon counties, compares electricity, natural gas, and other home energy costs with household income. It shows the percentage of households in each county with income at or below 200 percent of the federal poverty level. A household is considered energy burdened if six percent or more of its gross income is consumed by energy-related expenses.

Figure 7.1: Percentage of Oregon Households Considered Energy Burdened and Earning 200 Percent or Below Federal Poverty Level (by County)³



Percent of Energy-burdened Households

- 15-29%
- 30-39%
- 40-50%

The second component of energy burden is energy costs. National studies have found that even though households that are low-income or in poverty paid less overall on energy bills compared to other households, they paid more per square foot. This factors in on-average smaller living spaces and challenges such as:⁴



- Inefficient and/or poorly maintained heating, ventilation, and air conditioning systems.
- Inadequate insulation and air sealing, leaky roofs and attics.
- Inefficient lighting, water heaters, and appliances like refrigerators and dishwashers.
- Inability or difficulty affording up-front costs of energy efficiency investments.
- Chronic economic hardship or sudden economic hardship like health or family events.
- Lack of access to or knowledge about energy conservation measures or assistance programs.
- Living arrangements, such as renting, with limited ability to improve housing conditions.

Energy burden is just one aspect of a wide range of issues that households with low incomes face. As low-income Oregonians spend a greater share of their income on energy, their energy bills often compete with housing costs, transportation, groceries, medical expenses, and other basic needs. 211Info, a nonprofit, helps people in need navigate and connect with services and resources. They received 6,477 requests for utility assistance in the fourth quarter of 2017, representing 11 percent of all service requests received; and utility assistance was the third most requested service behind housing assistance and social or behavioral support. Another 1,576 requests were submitted for assistance with transportation, including 436 requests for help with gas money.⁵ Both of these categories of requests represent facets of household energy burden, and both indicate low-income Oregon households are seeking support to either reduce their energy costs, or in the case of transportation, provide them with other options.

In addition to non-profit organizations, other programs across the state offer assistance. Almost 400 federal, state, and utility programs and policies address energy burden.²³ Some of these programs offer direct support, helping consumers pay their utility bills, while others aim to reduce bills by reducing energy usage through weatherization and energy efficiency investments. A few categories of energy programs and policies are explored below, along with policies that affect energy-burdened households.

Ratepayer-Funded Energy Efficiency Programs to Reduce Usage and Utility Bills

Energy efficiency projects, commonly referred to as “measures,” reduce energy use and associated household energy bills. While some efficiency measures, like efficient light bulbs, are available to any occupant, some require structural upgrades or major equipment replacement. These projects typically require that the occupant is authorized to make changes and is financially able to make the improvement. As discussed in Chapter 6, Oregon has encouraged and embraced energy efficiency through a variety of policies and programs. This includes utility and government programs that leverage the system-wide value of energy

efficiency to keep customers’ overall costs low, while also addressing individual accessibility and costs barriers.

Thanks to a strong history of energy efficiency actions and continuing energy efficiency efforts, utilities avoid adding risky or costly electricity generation facilities, thereby reducing utility system costs. This creates lower overall system costs that allow customers to receive the benefits of energy efficiency, regardless of whether they personally install a measure.⁶

At the utility level, energy efficiency financial support programs use ratepayer funds. Disbursement of those funds is often predicated on whether the energy efficiency measure would be cost-effective by comparing the energy savings against the utility avoiding costs of building new generation or other utility system upgrades. Regulators and utilities use cost-effectiveness tests to determine if financial support from utility ratepayers is reasonable. Oregon utilities and regulators have typically used the Total Resource Cost test that compares the energy-efficiency measure investment to a utility’s cost of supplying the same amount of energy to determine whether the measure is the “best energy buy” for all utility customers. All cost-effectiveness tests specify the types and accounting of benefits and costs⁷ with a few of the differences illustrated in Table 7.2.

Table 7.2: Total Resource Cost Test Comparisons⁸

Test	Approach	Benefits	Costs
Program Administrator Cost Test (PACT) Also called Utility Cost Test (UCT)	Utility perspective. Includes all benefits and cost experienced by the utility only. Does it increase or decrease the utility’s cost?	Avoided utility costs and expenditures (i.e., avoided energy and fuel costs, avoided capital expenditures, avoided transmission and distribution expenses).	Only utility program costs and expenditures (i.e., administration, delivery, and incentive costs).
Total Resource Cost Test (TRC)	Utility and customer perspective. Includes all benefits and cost experienced by the utility and all the customers. Are all of the benefits greater than all of the costs (regardless of who pays the costs and who receives the benefits)? Is more or less money required to pay for energy needs?	Same as above, plus customer benefits that do not affect the utility (i.e., fuel, energy, or water savings, O&M savings, improved productivity, increased comfort, increased health and safety).	Same as above, plus net participant costs (i.e., customers share of cost above the utility incentive payment or other increased customer costs).
Societal Cost Test (SCT)	Utility and customer and society’s perspective. Includes all benefits and cost experienced by the utility, all the customers, and others that may not be customers. Is there an overall net benefit to society? Are overall net costs to society lower?	Same as above, plus other societal benefits (i.e., avoided emissions or reduced cost for governmental services).	Same as above, plus externalities (i.e., environmental cost and GHG emissions not paid directly by the utility or customers).

Several reports have evaluated cost-effectiveness tests and note that some tests result in energy efficiency measures for low-income customers with a “high cost and low benefit.”⁹ This is because low-income programs often provide more funding to address upfront cost barriers – sometimes covering the entire cost of a measure – and may have higher administrative costs for outreach and implementation. When these costs are included in a test, or if the costs are not outweighed by the benefits and overall system value, low-income programs can become ineligible for ratepayer funding. However, this can be addressed when jurisdictions have direction to achieve a policy objective that can be evaluated in a cost-effectiveness test. For example, jurisdictions could authorize consideration of societal or non-energy benefits such as community health, low-income participant impacts, and emissions reductions.¹⁰ Differences in the costs and benefits that can be included in a test will change the weighting for a measure, but there are tradeoffs that should also be explored (see section below on Emerging Ideas).

Ratepayer funded programs at utilities and the Energy Trust of Oregon have been working to reach a broader set of consumers. For example, Energy Trust provides increased cash incentives for qualified households that are in the moderate income range.¹¹ Also, other energy efficiency programs have been established to meet policy goals, such as weatherization services, low-income, and underserved market programs. These are often funded or supplemented by state and federal sources, not solely by utility ratepayers, which changes or eliminates the use of the cost-effectiveness tests discussed above. These federal and state weatherization programs may use different assessment criteria, such as a savings-to-investment ratio that calculates the amount of energy savings versus the cost to install a measure.¹²

Weatherization to Reduce Energy Usage and Costs for Households

Weatherization services are a type of energy efficiency program that targets customers living in existing, and often older, residential and multifamily buildings. Weatherization programs specifically for moderate and low-income households are supported by utility, state, and federal funding. By providing financial assistance in the form of energy efficiency upgrades, weatherization programs can reduce the energy costs of low-income consumers. The state and a community action network, made up of seventeen local community action agencies and a nonprofit corporation are responsible for administering federal funds in addition to any state or local funds set aside for weatherization. Oregon’s weatherization program is administered by OHCS,¹³ which contracts with organizations in the community action network to work with income-eligible households to conduct energy audits and install energy efficiency measures.¹⁴



The federal government provides energy efficiency aid through the Weatherization Assistance Program (WAP), funded through the U.S. Department of Energy (USDOE) and the U.S. Department of Health and Human Services (USHHS). The program supports energy efficiency improvements regardless of the heating option or fuel type used in the home at no cost to households that are at or below 200 percent of Federal Poverty Income Level. Priority is given to seniors, people with disabilities, households with children under the age of six, and households with a high energy burden. Federal funding allows for an expanded scope of energy efficiency investments, such as funding for home repairs, health and safety measures, and direct assistance in paying energy bills. For 2018, Oregon received \$3,163,650 in federal WAP funding.¹⁵

Energy Conservation Helping Oregonians (ECHO), funded by Oregon’s public purpose charge, supports weatherization projects for households that are at or below 200 percent of Federal Poverty Income Level in Portland General Electric and Pacific Power service territories. Weatherization projects include ceiling, wall, and floor insulation; energy-related minor home repairs; energy conservation education; air infiltration reduction; furnace repair and replacement; or heating duct improvements.¹³ OHCS also administers the Oregon Multifamily Energy Program (OR-MEP), which promotes and facilitates energy-efficient design in affordable multifamily housing through design assistance, cash incentives, coordination with other regional programs, and education opportunities. Funding is available on a quarterly basis for new and existing affordable multifamily buildings in Pacific Power and PGE service territories.¹⁶

The State Home Oil Weatherization (SHOW) Program is funded by an assessment on petroleum suppliers and is administered by OHCS. The SHOW Program provides cash payments to eligible applicants who conduct energy saving upgrades and weatherization measures on homes heated by fuel obtained from fuel oil dealers.¹⁷

Bonneville Power Administration established low-income weatherization programs in the mid-1980s, which today are part of BPA’s Low-Income Energy Efficiency Program (LIEE). In addition to weatherization, the program offers some efficient appliances, heating systems, and energy efficient lighting. Disbursements include \$4.6 million of LIEE funds to state programs in Oregon, Washington, Idaho, and Montana, based on Census Bureau data on the number of low-income people in the state, and \$515,000 directly to Tribes residing in BPA’s service territory. BPA grants follow the USDOE Weatherization Assistance Program guidelines for weatherizing homes, but include some differences that seek to provide greater flexibility in applying the funds towards projects. Similar to the programs above, OHCS receives the funds and sub-contracts with organizations in the community action network, which conduct the weatherization installations. These organizations receive funding from several sources, and are constantly combining and leveraging funding to complete work on low-income housing.¹⁸

Separate from LIEE is an “Energy Efficiency Implementation” budget. This is designated to consumer-owned utilities that use BPA power for acquiring energy efficiency savings toward the target established by the Northwest Power and Conservation Council to help reduce overall energy demand on the hydropower system.



COMMUNITY ACTION PARTNERSHIP OF OREGON

Eric and Cherrie Schwartz moved to Central Oregon in 1971, and have lived there ever since.¹⁹ When the couple's heating system failed in Spring 2016, they were worried about how to afford a new one. The couple had to ask hard questions: Would they have to take out a second mortgage? Would they lose their home? Would the stress take a further toll on Eric's health?

For years their primary source of heat was a wood stove and Eric chopped wood during the summer and fall. But after Eric's stroke in 2013, the couple had to rely on their old furnace that, after thousands of dollars-worth of repairs, stopped working in April 2016. And that spring, they learned more about Neighbor Impact's Weatherization Program. Neighbor Impact is a local agency in the Community Action Partnership network. "We received energy assistance for a few years after Eric's stroke so we knew about Neighbor Impact," says Cherrie. "Then, when we attended an Energy Education workshop at the Neighbor Impact office, we found out about your furnace replacement and Weatherization programs and knew right away we needed to learn more."

Cherrie and Eric learned that they qualified for home weatherization and a full heat system replacement. Over the period of a few months, Neighbor Impact Weatherization and Energy Assistance crews collaborated to add fiberglass insulation, install weather stripping, and replace the furnace with a new system. With this weatherization assistance, Cherrie and Eric were prepared for a warm and comfortable winter in their home.

Financial Assistance for Energy Bills

In addition to programs to reduce energy use, other programs help pay the bills to keep the power and heat on. The Low Income Heating Energy Assistance Program (LIHEAP), funded through USHHS, helps low-income consumers pay their home energy expenses.²⁰ LIHEAP is a block grant, and Congress determines total funding annually, which is allocated to states using a formula. For 2018, Oregon received \$36.7 million, which includes LIHEAP funds directly provided to federally recognized tribes in Oregon.²¹

Oregon Energy Assistance Program (OEAP) was established in 1999 with the purpose of reducing household service disconnections. OEAP assists low-income households in PGE and PacificPower service territory who are in danger of having their electricity service disconnected due to unpaid utility bills.²² Funding is generated from each utility's customers, and funds are expended solely for low-income home electric bills in the service area of the electric company from which the funds are collected.

Both LIHEAP and OEAP have income eligibility requirements of 60 percent or less of state median family income. Both programs are administered by OHCS – in partnership with organizations in the community action network through contracts to administer the two energy assistance funds.¹³

Finally, all of Oregon's electric and natural gas utilities have funding and programs to help senior citizens and/or low-income customers pay their bills. In addition to OEAP above, a recent inventory by OHCS illustrates the wide range of over 400 programs across the state that provide bill assistance, bill discounts, and weatherization support.²³

Cost of Heating Fuels Outside of Regulated Electric and Natural Gas Utilities

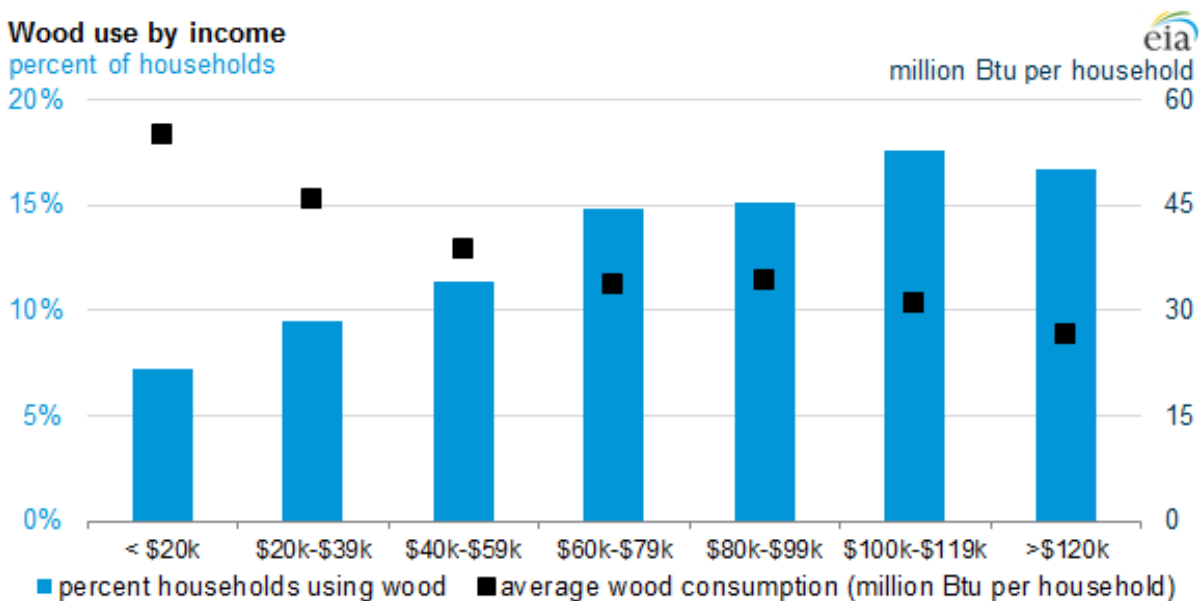
By and large, the above sections emphasized programs available to households heated by electricity and natural gas delivered by regulated utilities. In 2016, 49.7 percent of Oregonians used electricity for heating, while 38.1 percent used natural gas,²⁴ and from October 2015 to September 2016, LIHEAP funds helped pay heating costs for 48,246 households using electricity and 9,324 households using natural gas.²⁵

For many Oregonians, however, propane, wood, and fuel oil are also important heating sources. Federal funding for LIHEAP and WAP can be used to support households that use any type of heating fuel. For example, from October 2015 to September 2016, LIHEAP funds helped pay heating costs for 1,899 households using propane, 239 households using wood pellets, 755 households using wood logs, and 1,513 households using oil.²⁵

More than 26,000 Oregon households rely on propane as their primary heating source.²⁴ In 2017, the cost for propane ranged between \$2.31/gal and \$2.47/gal,²⁶ and there are services that allow consumers to compare prices of different propane providers.²⁷

Approximately 100,000 Oregon households use wood for heating. The U.S. Census Bureau, the source of this data, does not specify housing type or if these households use wood as a primary or secondary source of heating.²⁸ National data indicates that lower income households use firewood or pellets for heating,²⁹ which could help reduce utility bills. Wood pellet fuel is typically sold in 40-pound bags at about \$3 to \$4 each or about \$180 to \$250 a ton.³⁰ Most homeowners who use a pellet stove as a main source of heat go through two to three tons of fuel per year.³⁰

Figure 7.2: Wood Use by Income²⁹



The cost of heating fuels like propane and wood pellets may supplement more common heating methods – electricity and natural gas – which can complicate the multi-tiered, layered programs in Oregon to address energy burden. Also, rates for these fuels are not regulated in the same way as electricity and natural gas (as discussed later in this chapter). The costs are determined by market forces – supply, demand, and competition of the fuels – and can therefore be unpredictable for consumers. Similarly, transportation fuels costs do not involve rate regulation and are instead determined by market forces.



Transportation Fuels

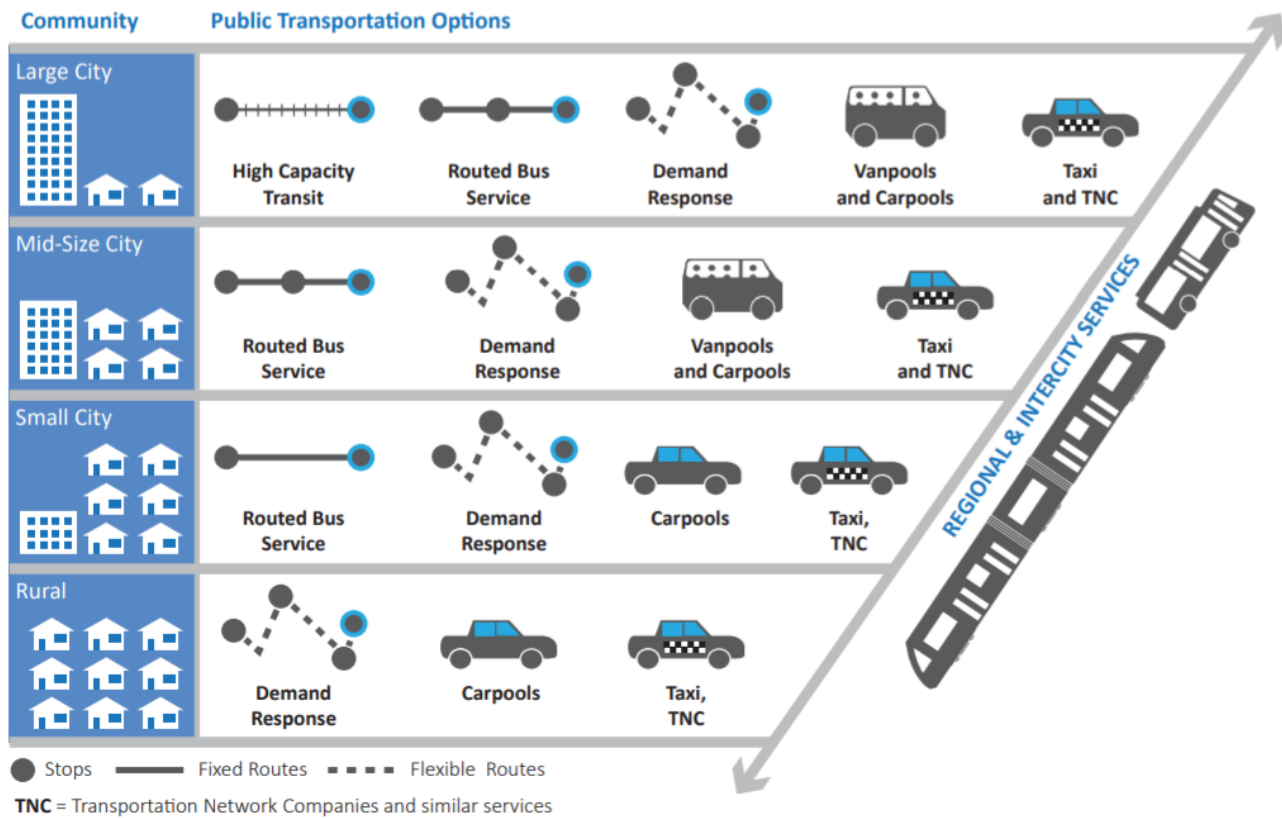
When considering energy burden, heating and electric bills are part of the calculation of energy costs, but this calculation does not typically include transportation fuel costs. Unlike electricity and natural gas service, which are monopoly services regulated by the Oregon Public Utility Commission (OPUC) or local boards and offered at non-discriminatory rates, the amount of money consumers spend on transportation fuel is dependent on global influences that affect the price at the pump.

For many communities in Oregon, public transportation provides a basic, affordable travel option and vital access to employment, services, groceries, and education.³¹ Where public transportation is inaccessible or inconvenient, heavy reliance on personal vehicles can mean higher transportation costs.

Location Dependent Transportation Options

As the Oregon Department of Transportation's recent public transportation plan details, transportation options differ in urban and rural parts of the state.³⁵ Options range from personal vehicles, high capacity transit such as light rail, routed bus services, shuttles or buses for particular locations that do not have fixed routes, vanpools or carpools, taxis, and transportation network companies (TNCs). Urban public transportation providers offer the widest variety of services in the state, use a range of transit technologies, and must negotiate urban environments and congestion to deliver service. Public transportation providers in smaller communities and rural areas have different circumstances. Many have only demand response service, sometimes operated by volunteer drivers, and serve relatively few customers, traveling long distances to meet riders' needs. ODOT's plan provides a helpful visualization of transportation options.

Figure 7.3: Public Transportation Options³⁵



Transit organizations have put low-income and/or senior citizen transit fare programs in place to help reduce the costs for low-income riders. For example, TriMet has a low-income fare, for which more than 5,000 people signed up for in just three months,³⁶ in addition to other programs to improve access to transit.³⁷ However, transit may not be accessible in all suburban or rural communities, creating greater reliance on personal vehicles.

Transportation Challenges for People that are Low-Income or Living in Poverty

Nationally, suburban communities have experienced an increase in the number of residents living in concentrated poverty. Between 2000 and 2012, the number of suburban poor living in distressed neighborhoods grew by 139 percent.³⁸ There is some indication that these trends are visible in Oregon as well.³⁹

The Federal Highway Administration published a Poverty Brief using National Household Survey data that shows the mix of transportation options used by people at a range of income levels – with the vast majority of trips occurring in single occupancy vehicles or multi-occupancy vehicles.⁴⁰ While this national data is from 2009, trends in Oregon have shown an increase in vehicle miles traveled between 2009 and 2017,⁴¹ suggesting that travel continues to occur mostly in cars. With cars serving as the primary mode of transport – and often cars with low fuel efficiency in the case of lower-income people – expenditures for vehicle, fuel, insurance, and maintenance for these households can be high and unpredictable.

Even as reliance on cars for transportation expanded, this may not be an option for many consumers. Table 7.3 shows that people in poverty or low income households are less likely to have access to a vehicle, with little change over ten years.

Table 7.3: Percentages of Persons 18 or Older Without Access to a Vehicle⁴²

Income	2006	2016	2006-2016 Change
Living in Poverty	22.02%	19.96%	-2.05
101-200% Above Poverty Line	11.41%	10.57%	-0.83
201-500% Above Poverty Line	3.89%	4.06%	0.17
More than 500% Above Poverty Line	2.12%	2.54%	0.42
All Adults	6.70%	6.63%	-0.07

The upfront cost of purchasing a new or used vehicle can be a barrier for many lower income Oregonians, and the same is true of maintenance costs and fuel costs. Prices for gasoline or diesel are largely dependent on crude oil prices, which are determined by global supply and demand.⁴³ Examples of policies that seek to mitigate transportation fuel costs are highlighted below. These policies mitigate the cost of running a vehicle with better fuel efficiency. They also encourage electricity as a cheaper transportation fuel, and seek to reduce the upfront cost of electric vehicles (EVs). However, it will take time to lower costs enough for all Oregonians to access these newer technologies.

- **Efficiency to Reduce Fuel Use and Cost:** Similar to the benefits of improved energy efficiency in the electric and heating sectors, many personal vehicles have become more efficient and use less transportation fuel. Federal standards set fuel efficiency targets that manufacturers must achieve for new car models, which have raised the overall efficiency of all cars and give consumers more fuel efficient options and save money at the pump.⁴⁴
- **Encouraging Electricity as a Cheaper Transportation Fuel:** EVs have low maintenance costs, and the cost of electricity is cheaper than petroleum based fuels. U.S. Department of Energy’s eGallon calculator compares the cost of fueling a vehicle with electricity to a similar vehicle that runs on gasoline; in Oregon a gallon of gasoline at \$3.24 is equivalent to \$1.02 for an eGallon.⁴⁵ The cost of fueling a vehicle with electricity is about 28 percent of the cost for a similar gasoline-powered vehicle (see Chapter 4 for more information).
- **Reducing Upfront Costs of Buying an EV:** The base price, without incentives, of new electric vehicles can be about \$24,000 and as high as \$140,000,⁴⁶ while there are some used EVs available for under \$6,000.⁴⁷ EVs are too expensive for Oregonians that are low-income or in poverty. Also, federal EV tax credits, usually the largest monetary incentive available, can only be applied to individuals with large tax burdens, who are typically higher income. Programs at the federal, state, and local levels have aimed to bring down the upfront vehicle purchase price, including some local utility rebate programs and the Oregon “Charge Ahead” EV Rebate, the latter of which was developed specifically for low- and moderate-income households. (See Chapter 4 for more information).

Outside of the cost to purchase an EV, additional obstacles remain; it is often harder to ensure a reliable charging platform in a multi-family residential building or a rental home. Some nonprofits are partnering with local community development organizations to provide shared electric vehicles;⁴⁸ these pilots have the potential to help us understand how to make electric vehicles more accessible to low-income households, reducing their energy burden.

COMMUNITY-BASED ASSESSMENT OF SMART TRANSPORTATION NEEDS IN PORTLAND

In addition to EVs, Transportation Network Companies like Lyft and Uber are emerging technologies that are changing the transportation landscape. There are barriers, however, to accessing these emerging transportation technologies.

OPAL (Organizing People / Activating Leaders) and Forth recently partnered with Portland State University to conduct a community-based assessment of smart transportation needs in Portland.⁴⁹ In the assessment, “smart transportation” was mobility through emerging autonomous, electric, connected and shared vehicles, and “transportation as a service” (ridesharing) technologies. The assessment used a mixture of quantitative and qualitative research approaches with two focus groups of community members from East Portland and a survey with 308 total responses (also concentrated from East Portland). Lower income survey respondents and respondents of color had significantly lower access to drivers’ licenses, bank accounts, and credit cards, and also rely more on paying cash for TriMet tickets. In addition, lower income respondents and respondents of color had lower access to internet both at home and at work, and were more likely to need to reduce data use or cancel cell phone plans because of cost or data restrictions. Older survey respondents and focus group participants were resistant to connecting personal financial information to phone and internet-based mobility applications.

Recommendations from the surveys and focus groups included the following:

- 1. Improve public transportation information, scheduling and route finding through smartphone applications;**
- 2. Improve public data access (such as through public Wi-Fi);**
- 3. Implement policies to lower barriers to purchasing or using electric vehicles; and**
- 4. Expand translation for important smart mobility applications into languages other than English.**

This kind of data and analysis can be helpful to transportation and urban planners and policy makers when considering the distribution of benefits and burdens from new technologies in energy and transportation. Among several findings, the assessment showed that smart mobility technology could improve the mobility of transportation disadvantaged. However, access to credit, banking, and affordable cell and internet service are formidable barriers.

Consumer Protection

Underpinning specific programs discussed above to reduce the energy burden for Oregon households is a long-standing tradition of protecting consumers in the provision of electricity and natural gas from utilities. Indeed, consumer protection is rooted in the history of how the country’s energy system was developed, and with it concepts such as regulatory oversight of rate setting, requirements for rates to be publicly posted, oversight of whether utility investments are prudent, and universal service for electricity.

Universal Electricity Service

Oregon’s electric utilities have an obligation to provide universal electric service to all Oregonians in their designated service territories. This means that a home in a particular territory in Oregon must be served by the utility designated for that territory; a household does not choose which utility provides its electricity.⁵⁰

The benefits of providing electricity as an essential service were broadly recognized in the early twentieth century and led to federal and state laws that encouraged rural electrification and created “regulatory compacts.” Laws and policies encouraging rural electrification ensured electricity access to all Oregonians, including rural areas that had less infrastructure compared to urban or industrial parts of the state.⁵¹ The concept of a regulatory compact involves the state requiring an investor-owned utility to provide universal electric service in exchange for the state granting a monopoly over a specified service territory with an opportunity to earn a profit on the investor-owned utility’s investments.⁵² While the term “regulatory compact” is not found in Oregon law, it encapsulates the set of laws and system of regulation that has been developed with regard to investor-owned utilities.⁵³

Today, utility rates for electricity service are established through public, transparent processes for both investor-owned and consumer-owned utilities. Investor-owned utilities are private electricity or natural gas companies, while consumer-owned utilities are nonprofit entities formed as municipal utilities, people’s utility districts, and rural electric cooperatives.⁵⁴ For consumer-owned utilities, regulatory oversight is handled by publicly-elected local boards. Three electric and three natural gas investor-owned utilities have their utility rates approved by OPUC.

Thirty-six Oregon-based consumer-owned utilities also have exclusive service territories in Oregon, but they are nonprofit entities that do not have shareholders that earn a profit on utility system investments. The first municipal utility in Oregon was established in 1889 – McMinnville Water and Light.⁵⁵ There are now twelve municipal electric utilities that are overseen by Oregon city governments or city-affiliated boards. There are also six people’s utility districts and eighteen rural electric cooperatives in Oregon that have locally-elected boards.⁵⁶ Formed in 2001, the Umpqua Indian Utility Cooperative is the first utility in the Northwest both owned and operated by an Indian tribe.

FIND YOUR UTILITY

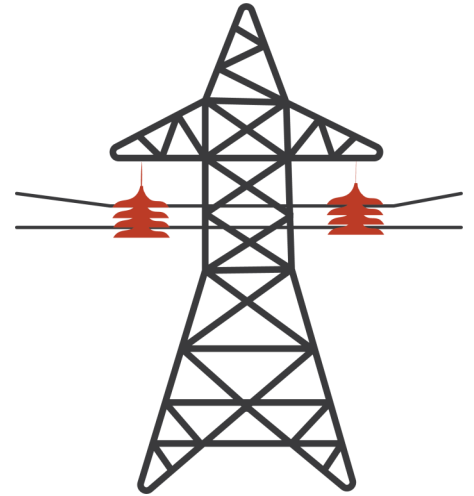
The Oregon Department of Energy has a handy interactive tool on its website to help Oregonians — and future Oregonians — find their energy utilities:

<https://go.usa.gov/xPy3y>

Together, consumer-owned utilities and investor-owned utilities provide universal service of electricity to all Oregonians and have public processes to establish rates for consumers.

Oversight of Electric and Natural Gas Utility Rates

The OPUC oversees rates for natural gas services and requires information about rates for natural gas services to be public. Locally-elected boards, cities, or the OPUC oversee how rates for electricity are set and require information about electricity rates to be public. For the most part, an Oregonian's electric bill is a function of the amount of electricity used, the rate established for the electricity services, other charges, and fees.



The public process that establishes utility rates involves an examination of the prudence of a utility's costs to transmit the electricity or natural gas to its customers. For example, prudence involves the OPUC reviewing capital projects or other investments to determine if they have been constructed or implemented as proposed, according to sound management practices, and at a reasonable cost.⁵⁷ Integrated resource planning is a public process that helps to reduce risk of non-prudent investments by assessing system needs over a 20-year period and developing an Action Plan over a two- to four-year period. For the investor-owned electric utilities, the OPUC has adopted guidelines that require consideration of electricity generation, transmission, and demand-side resources – such as energy efficiency and demand response – on a comparable basis.⁵⁸

The process to set rates aims to allocate total costs across all the utility's customers in a just, reasonable, and non-discriminatory manner.⁵⁹ A utility's cost of providing electricity or natural gas to its customers can vary depending on how different customers receive and use energy. Because of these distinctions, utilities design different rates for several classes of customers, such as residential, commercial, industrial, and sometimes, agricultural customers.

Rates are set based on the cost to provide electricity or natural gas service to customer classes that have similar usage and cost profiles for the utility system. Utility requirements seek to ensure that customers in the same class are treated equally and, in general, utilities are required to provide non-discriminatory access and are prohibited from providing preferential treatment to customers of a certain class or subgroups within a customer class.⁶⁰ Specifically for natural gas service rates, the cost of the wholesale natural gas is passed through to consumers without any profit for the utility. Natural gas utilities in Oregon are local distribution companies and purchase natural gas on the wholesale market on behalf of their customers. There is a purchased gas adjustment public process that occurs at the OPUC to ensure the costs are reasonable and prudent, and that the company has taken all actions available to it to keep these costs as low and stable as possible.⁶¹

Many proceedings at the OPUC require complex technical and legal processes, in particular for the establishment of rates. Oregon Citizens' Utility Board is a nonprofit created in 1984 by ballot initiative to advocate on behalf of and protect the rights of the residential and small business customers of investor-owned electric and natural gas utilities. CUB intervenes in regulatory proceedings before the OPUC and advocates on behalf of these customers.

ELECTRIC UTILITY RATES 101

At a high-level, utilities establish the retail rates that they charge to customers in a manner that reflects the total cost to the utility of providing service to its customers, which is called “revenue requirement.” This revenue requirement includes the capital cost of useful assets, taxes, operations and maintenance costs, and depreciation, which may differ by utility due to differences in the type of load, distances between loads, and other service territory characteristics. In the case of investor-owned utilities, it also includes profit to shareholders on top of those costs.

This ratemaking process is then intended to enable the utility to recoup its revenue requirement to deliver electricity service by allocating its costs across its sales of electricity to ratepayers.

Utility Rates=

Utility’s Revenue Requirement (Cost of Service) (measured in \$)

Utility’s Electric Sales (measured in kWh)

In addition, there are several other elements to a consumer’s bill, such as a basic customer charge that is the fixed and reflects the cost to connect a customer to the grid. For more information about what makes up your bill, see Chapter 1.

Equity

Between this longstanding history of consumer protection and our state’s activities to reduce energy burden, Oregon is well-equipped to deepen our approach with robust engagement on equity. The term *equity* refers to both process and outcomes. Specific to energy, does the process through which energy-related decisions are made include intentional engagement with all potentially affected communities and a comprehensive analysis of potential impacts? These types of process components ideally lead to energy-related decisions and outcomes with a more equitable distribution of benefits and burdens.⁶²

Energy programs and policies can involve structural barriers that prevent households that are low-income or experiencing poverty from equitably accessing energy options and associated benefits. Split incentives, for example, are an issue affecting energy access by renters, who tend to earn less than people who own their homes. In 2015, the median household income for renters in Oregon was \$32,513, while the median household income for homeowners was \$67,070.⁶³

Split incentives arise when an owner has control over the upgrades in the building, but the renter is paying the energy costs of the building being less efficient. In the case of multi-family housing, there can be complex needs, ownership, and financial arrangements – in which upgrades that require changes to an entire building or system are more complicated in a dense, multi-unit building.⁶⁴ For renters, the energy infrastructure is typically locked in with the rental property; for example the property may have gas-only or electric-only heating. Renters are likely not able to change the energy source or equipment unless they move. They typically do not have control over the building’s roof or exterior infrastructure, which may limit their ability to

install solar panels, add roof insulation, or improve rooftop heating units. In addition, the rental property owner may not disclose energy costs to potential renters, so a property may have cheaper rent but very high energy bills and a renter may not know it until after a contract is signed. While these barriers may occur for renters of any income level, low-income renters may have less ability to mitigate or pay high utility bills that result from inefficient energy usage.

Regional entities, utilities, and government agencies have programs that aim to address split incentives with rentals and more complex issues with multi-family properties. For example, the SHOW Program includes rental property owners and the OHCS Energy Assistance program includes both homeowners and renter households. Energy Trust of Oregon offers a variety of multifamily incentives and EWEB offers targeted help for renters. Also, while the issue of split incentives is a helpful illustration, it is important to note that low-income homeowners, not just renters, may experience issues with equitable access to new clean energy technologies.

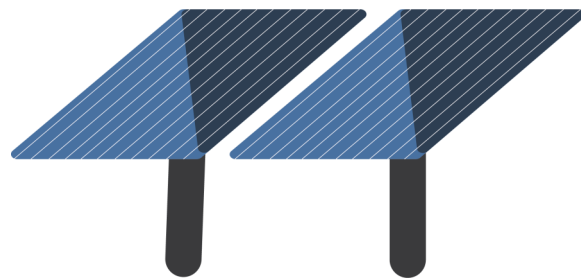
When discussions about energy policy and development incorporate equity considerations, programs can be developed to ensure outcomes that include:

- Traditionally underrepresented members of the public and community-based organizations effectively participating and engaging in decisions that shape their energy options.
- Benefits from clean energy and energy assistance programs, in particular those that are publicly funded, accrue to all Oregonians, across all ethnicities and income levels.
- Clean energy and energy assistance programs that increase access to the benefits of energy efficiency, conservation, and renewable energy by all Oregonians, across all ethnicities and income levels people.
- Economic opportunities from clean energy and energy assistance programs are available to all Oregonians, across all ethnicities and income levels.
- Clean energy and energy assistance programs that effectively overcome barriers that many people experience related to property ownership, income, credit scores, and inability to use tax credits.
- Increased access to transportation options to reduce households' reliance on vehicle ownership and transportation fuels for all Oregonians, across all ethnicities and income levels.

Many individuals and organizations, in particular community-based organizations, are asking questions and engaging in discussions to encourage more equitable outcomes in energy policies and programs. Indeed, this report has already touched on some programs – such as the Charge Ahead Rebate – where intentional program design features can help achieve more equitable outcomes. Still, given trends of a rapidly changing energy sector, and uncertainties about what these changes may mean for consumers, it is important that equity considerations are understood more broadly. Broad understanding of equity considerations can benefit from comprehensive energy analysis that includes demographic information such as race, gender, geographic location, and income levels in order to better plan for an equitable future and keep up with the rapid pace of change in the energy industry. This type of work has begun through implementation of Governor Brown's Executive Order 17-20, Directive 5B, which requires OHCS, ODOE, and OPUC, in collaboration with Bonneville Power Administration and Energy Trust of Oregon, to assess energy use in all affordable housing building stock, and develop a ten-year plan for achieving maximum efficiency (see Chapter 6 for more information).³²

Trends of a Changing Energy Sector and Access to New Technologies

As discussed throughout this report, the energy industry has experienced several trends that have brought us to our current state of rapid change. Historically, utilities planned and invested in generation, transmission, and distribution assets to meet steady growth in demand for electricity (also called “load”). This trend was a result of electric utilities’ obligation to provide universal service, the rise of an energy intensive manufacturing based economy, and technological advancements allowing consumers to furnish their homes with more electrified home appliances and devices.⁶⁵ For the last 20 years electricity load is not growing as it traditionally did, due to energy efficiency and a shift from more energy-intensive manufacturing to a less energy-intensive digital and service-based economy.^{65,66} Along with these broad economic shifts, there was a drop in load growth due to the recession of 2007-2009, and load growth has remained slow during the recovery over the past decade.^{65,67}



More recently, Oregon has seen increased investment in and increased consumer preferences for renewable energy. As discussed in Chapter 3, local jurisdictions have adopted clean energy or climate change goals. For example, in 2017, Multnomah County and the City of Portland announced goals that all of their electricity should come from renewable energy sources by 2035.⁶⁸ In addition, a growing number of consumers have subscribed to voluntary “green power” programs or installed rooftop solar. High upfront costs and inaccessible roofs for renters make it difficult for many low-income consumers to afford on-site energy generation like rooftop solar. Responding to concerns of inequitable access to rooftop solar, the state established a low-income carve-out in a 2016 law that enabled community-based solar projects in order to encourage low-income participation. The program is in the implementation phase at OPUC (see Chapter 3 for more information about the community solar program).

Meanwhile, new technologies continue to come online. Examples are sensors and controls that enhance information-sharing across the grid and allow for more dynamic balance of supply and demand across the entire electrical infrastructure, which will help to manage and optimize generation, consumption, and the overall flow of electricity.⁶⁹ The electricity system of the future will likely have greater two-way flow capabilities, where customers both receive and supply electricity from and to the grid.⁷⁰ As technology continues to evolve, consumers will have more options for clean energy and distributed energy resources – promising for an efficient system and for meeting environmental and climate change goals. And with these changes, there must be strong attention to whether emerging options are accessible to customers and include an equitable distribution of benefits and burdens.

OPUC 978 Process and Report

The trends of the changing electricity sector, new technologies, consumer preferences, and the policy environment prompted the legislature to pass Senate Bill 978 in 2017. As required by the law, the OPUC conducted an extensive stakeholder process to explore how investor-owned electric utilities are adapting to the trends discussed above and how they are regulated in a changing industry and policy environment.⁷¹ The law directed the OPUC to identify changes that could “accommodate developing industry trends and support new policy objectives without compromising affordable rates, safety and reliable electricity service.”

The process to gather information and explore these trends consisted of workshops and input from stakeholders, who identified four themes of interest to address when considering changes to investor-owned utility incentives and the regulatory model. Equity was a significant and important part of the stakeholder discussion:

1. Societal interests in climate change and social equity;
2. Rapid change in capabilities and costs of new technology;
3. Balancing individual choices and collective system goals; and
4. Competition and market development.⁷²

The OPUC released a comprehensive report about the process, and in it recognized that the regulatory process itself must allow opportunities for community-based organizations, members of the public, and stakeholders new to the OPUC process to expand participation – exactly the kind of process-oriented approach equity considerations require. Other commitments outlined in the report:⁷³

- The OPUC plans to undertake a full and accurate valuation of consumer and non-utility options, such as distribution system planning and transparency, which could encourage alignment with state energy and climate change goals and the utility system. This valuation could be helpful in achieving more consistent pricing methodologies for distributed energy resources, such as solar, energy storage, energy efficiency, and demand response.
- In addition, the OPUC plans to launch a performance-based regulation process, which is permitted under their existing alternative form of regulation statute. (ORS 757.210). This process would explore areas of utility service where investor-owned utilities could earn a rate of return (profit) on outcomes rather than only prudent capital expenditures, which could help align the utility's incentives with customer objectives.
- The OPUC will participate with other states and agencies to promote regional market development, which is a foundation for efficient wholesale competition and regional resource diversity to lower costs and risks to consumers.
- The OPUC will implement a strategy for engagement and participation.



Emerging Ideas

OPUC's 978 process and report surfaced several ideas that could be applicable to investor-owned utilities, but may be unavailable in the OPUC's statutory authority. For example, the OPUC may be limited by statutory prohibitions against discrimination between customers – and corresponding prohibitions on preferential treatment between customers – based on factors other than cost-of-service or service characteristics.⁷⁴ These are the key factors that are used to create separate classifications of service that pay different rates, such as the residential rate class or a small commercial rate class. Some have suggested income differentiated rate classes that would recognize that each residential customer may not have the ability to pay the same rate, regardless of income or housing type. This type of rate design would provide different rates within the residential customer class depending on the customer's income or housing type. However, as discussed above, there is a requirement to have “non-discriminatory” rates – which includes a prohibition on differentiation within rate classes, making income differentiated rate classes unavailable.

What the 978 process shows us is that regulators and utilities are weighing a host of emerging ideas that are likely to face Oregon in the near future. And the state more broadly is evaluating programs and program proposals that seek to expand the benefits of the changing energy sector to all consumers. Emerging ideas to address issues related to consumer protection, energy burden, and equity have been adopted by some utilities, established in other jurisdictions, or have been discussed in research or studies. Below are examples of such ideas, but they may not be the right fit or may have program design issues specific to Oregon. At the same time, an exploration of emerging ideas could help the state gain an understanding of whether they can offer benefits in Oregon.

As previously discussed, cost-effectiveness tests are often used to help determine what types of energy efficiency programs are reasonable for ratepayer funding. In 2017, the National Efficiency Screening Project produced the National Standard Practice Manual for assessing cost effectiveness and introduced the **Resource Value Test**.⁷⁵ The Resource Value Test accounts for costs and benefits specific to the policy priorities in a jurisdiction. This can be used for future energy planning and analysis that includes different value considerations, such as greenhouse gas (GHG) reduction and non-energy benefits that may have even greater magnitude in low-income communities – like reduced energy burden and increased health and comfort.⁷⁶

Another example involves aligning an investor-owned utility's revenue and shareholder earnings with specific performance metrics and other non-investment factors like reducing energy burden or meeting environmental targets. **Performance Based Regulation** is a regulatory framework that connects goals, targets, and measures to utility performance or executive compensation.⁷⁷ In 2013, the United Kingdom adopted an approach called “Revenue = Incentives + Innovation + Outputs” (RIIO), where their utility earns profit on outcomes rather than on returns on investment.⁷⁸ The state of New York is investigating adoption of performance based regulation through a “Reforming the Energy Vision” proceeding at the New York Public Service Commission.⁷⁹ As a result of SB 978, the OPUC will be undertaking a process to explore some areas where investor-owned utilities could earn a rate of return (profit) on outcomes or other metrics, which could help align the utility's incentives with customer objectives such as equity and climate change.⁸⁰

Pay-As-You-Go or **Prepaid Programs** allow customers to front-load their accounts so they pay in advance for the electricity they will use. Utilities such as Midstate Electric Cooperative⁸¹ and Oregon Trail Electric

Cooperative⁸² have had strong interest in their programs, with approximately 4,300 customers participating.⁸³ Some consumer advocates have raised concerns about these programs.⁸⁴ They argue that there are disadvantages to consumers, including potentially different rates, in addition to foregoing consumer protections like notification requirements and protections from service disconnections.⁸⁵ The National Consumer Law Center in a 2012 brief about pre-pay programs stated, **“With prepaid utility service as it currently operates, low-income customers who struggle the most to pay bills often end up paying the most while receiving second-class utility service.”**⁸⁵

PAY-AS-YOU-GO PROGRAMS

Some electric cooperative utilities in Oregon are giving their members a new option for paying for electricity: prepay programs. **Midstate Electric Cooperative** has had strong interest in their programs. Rather than paying a bill based on the amount of electricity a customer has used during the past billing period, prepay (or pay-as-you-go) programs allow customers to front-load their accounts so they pay in advance for the electricity they will use. Similar to filling up a car’s gas tank or using a pre-paid mobile phone plan, money is deducted from a customer’s account as energy is consumed at home. Oregon consumer-owned utilities report that prepay programs have been a hit with their customers, who are given more control over their finances and ability to track their energy use. Customers receive alerts by email or phone when their balance is low – as long as the balance is above zero, they have electricity. Because customers have already paid for their service, there are no large opening account deposits or late fees for missed bills.

“Our members enjoy that prepay puts them in control – they decide the amount of power they purchase, the timing of their purchase, and their consumption.”

— Dave Schneider, Midstate Electric Cooperative CEO

Several utilities offer **discounts** on bills based on senior status or income bracket. For example, Ashland’s municipal electric utility offers a 20 to 30 percent bill discount to seniors and disabled customers,^{23,86} and Columbia River PUD offers a low-income senior bill discount of \$10 on the monthly fixed charge and 10 percent on the energy charges.^{23,87} **Bill caps** or **Percentage of Income Payment Plans (PIPP)** allow consumers’ electric or natural gas bills to be capped at a percentage of their household income. Eligible consumers pay a percentage of their income as to what has been deemed affordable in a PIPP program.⁸⁸ For example, in an Ohio PIPP program offered through most Ohio utilities, participating households pay six percent of their monthly income or \$10 each month to both electric and natural gas utilities – whichever is greater.⁸⁹

Finally, there has been consistent support for maintaining funding for low-income bill-payment assistance and weatherization,⁹⁰ but **increased funding** for energy and transportation assistance may help reach more households. For example, Oregon passed a transportation funding package in 2017 that provides state-wide funding for public transit, and California has used revenue from its cap and trade program to support low-income weatherization programs.⁹¹ There could be exploration of improved coordination and leveraging among the various low-income assistance programs that address different energy types to further equitable benefits.

Consumer protection in the context of energy has been around for almost a century, but there continue to be challenges faced by energy-burdened consumers and interest in securing more equitable outcomes from energy-related policies and programs.

Studies analyzing **energy burden** typically use household income and utility bills or other home energy costs, however energy-burdened households can also incur other energy-related expenses, such as transportation fuel. There are many programs for weatherization and bill assistance to address energy burden, but the reduction of energy use in weatherized homes may still not reduce the energy burden for very low-income households. There are currently no programs that comprehensively address the energy burden of multiple energy sources including transportation. There needs to be a greater understanding of the number of households that need weatherization assistance and how far existing funding is going to meet that need. This type of work has begun through implementation of Governor Kate Brown’s Executive Order 17-20, Directive 5B, which requires OHCS, ODOE, and OPUC, in collaboration with Bonneville Power Administration and Energy Trust of Oregon, to assess energy use in all affordable housing building stock and develop a ten year plan for achieving maximum efficiency.³² Additional research and analysis is needed to characterize the energy burden for a variety of metropolitan areas, income groups, and household types to develop a comprehensive approach to addressing the total energy burden – including transportation costs – for communities.

At the same time, the energy industry is in transition, with policies to **encourage clean energy** and new technologies that may not be accessible to some consumers. Given the rapidly changing energy sector, and uncertainties about what these changes may mean for consumers, it is important that equity considerations are understood more broadly. The state has benefited from the thorough work of the OPUC in the SB 978 process, which highlighted the importance of intentional engagement and stakeholder participation. The state should build upon this understanding of intentional engagement and stakeholder participation for more energy-related processes.

Better understanding of the benefits to and burdens of electricity, heating, and transportation options and programs on all Oregon consumers is needed by the state. More data and comprehensive analysis, including demographic characteristics, public health, and energy costs, would inform programs and policies to achieve a more **equitable distribution of energy benefits and burdens**.



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