Safer and Sustainable at Home
Virtual community-led workshops for sustainable homes and resilient neighborhoods

Household Energy Efficiency Workshop
June 3, 2020
Jeff Wong, Senior Sustainability Planner
City of Lakewood
Hosted by: Morse Park Sustainable Neighborhood

https://www.lakewood.org/SustainableWorkshop
Household Energy Efficiency Workshop Overview

- Energy 101: Electricity & Natural Gas
- Quick energy and water savings tips
- DIY projects
- Xcel energy efficiency programs
  - Rebate opportunities
  - Renewable energy options
  - Program highlights
Energy 101: Electricity Grid

In Lakewood, most of our energy (electricity, natural gas) from Xcel Energy


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2019 Lakewood Electricity Grid Mix

- Coal: 33%
- Gas: 37%
- Wind: 25%
- Solar: 4%
- Hydro: 1%

Compared to 2018:
- Gas: +4.3%
- Coal: -6.1%
- Wind: +1.5%
- Solar: +0.7%
- Hydro: -0.4%

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Energy 101: Household Electricity Use

Residential electricity consumption by end use, 2015
percent of total

- air conditioning 17%
- space heating 15%
- water heating 14%
- refrigerators 7%
- previously published end uses
- lighting 10%
- TVs and related 7%
- clothes dryers 5%
- ceiling fans
- air handlers (heating)
- separate freezers
- cooking
- dehumidifiers
- microwaves
- pool pumps
- air handlers (cooling)
- humidifiers
- dishwashers
- clothes washers
- hot tub heaters
- evaporative coolers
- hot tub pumps
- not elsewhere classified 13%

Source: US Energy Information Administration, 2015 Residential Energy Consumption Survey
1. Extracts natural gas from the ground
2. Transports natural gas to processing facility
3. Removes impurities that corrode pipelines and reduce energy value of gas
4. Boosts pressure of natural gas to move through transmission system
5. Transports natural gas hundreds of miles underground from producing regions
6. Reduces pressure for safe distribution locally; mercaptan (rotten egg smell) is added
7. Moves natural gas underground from gate stations through the city
8. Distributes natural gas to homes and businesses
9. Finally, natural gas is delivered to you

DID YOU KNOW?
- We have more than 2,500 miles of main in our distribution system and more than 2,800 miles of service lines.
- We provide natural gas to more than 205,000 service points in the Pikes Peak region.

https://www.csu.org/pages/ng-service-r.aspx

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Energy 101: Natural Gas Use

HOW IS NATURAL GAS USED?

- Water Heating: 30%
- Home Heating: 67%
- Cooking: 2%
- Other: 1%

CUBIC FOOT (cf)
Volumetric measure of natural gas
1 cf Represents the amount of natural gas contained in a space equal to 100 cf

https://www.csu.org/pages/ng-service-r.aspx

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Your Energy Bill

• How much are you and your neighbors spending on monthly energy bills?

• Understanding Your Bill

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Your Energy Bill

- Average Cost:
  - $0.11 / kwh
  - $0.72 / therm

- Average Use:
  - 545 kwh / month
  - 60 therms/month
What do you think of when you hear the words “Home Energy Efficiency”?
The LED Light Bulb

- Average US household has 50 light bulb sockets
- Estimated annual savings from switching out traditional bulbs: $190
- Xcel Energy bonus LED discounts @ Batteries Plus and Walmart locations
  - $1.96 for LED 12 pack ($0.16/bulb)
  - Regular price: $22.72
  - 60 Watt equivalent
- Light bulb recycling

https://www.supplyworks.com/info/led
City of Lakewood
recycle box
sustainability@lakewood.org

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Jeff’s 5 quick + easy (and no/low cost) Energy Savings tips

<table>
<thead>
<tr>
<th></th>
<th>Tip</th>
<th>Annual Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Program or adjust your thermostat while sleeping</td>
<td>$180</td>
</tr>
<tr>
<td></td>
<td>Lower 5 degrees in winter, Raise 5 degrees in summer</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Use a ceiling fan while running air conditioning</td>
<td>$42</td>
</tr>
<tr>
<td></td>
<td>Set thermostat 2°F higher when using a ceiling fan</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Lower water heater temperature</td>
<td>$49</td>
</tr>
<tr>
<td></td>
<td>Adjust from 140°F (manufacturer) to 120°F</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Use natural lighting instead of turning on lights</td>
<td>$30</td>
</tr>
<tr>
<td>5</td>
<td>Install smart power strips</td>
<td>$100</td>
</tr>
</tbody>
</table>

**Annual Savings:** $401 (3,000+ kwh)

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## DIY Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Difficulty</th>
<th>Estimated Annual Savings*</th>
<th>Time to Complete</th>
<th>Overall Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulate your water heater tank</td>
<td>Med.</td>
<td>$84-192</td>
<td>1.5 hours</td>
<td>$30</td>
</tr>
<tr>
<td>Seal air leaks with caulk</td>
<td>Easy</td>
<td>$120-240</td>
<td>1-2 hours</td>
<td>$3-30</td>
</tr>
<tr>
<td>DIY home energy audit</td>
<td>Easy – Med.</td>
<td>$240+</td>
<td>1-8 hours</td>
<td>$0</td>
</tr>
<tr>
<td>Install evaporative cooler**</td>
<td>Med.</td>
<td>$224</td>
<td>8 hours</td>
<td>$250+</td>
</tr>
</tbody>
</table>

* Based on annual utility bill of $1200
** Savings compared to AC, cost after Xcel rebate

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DIY Project: Insulate Water Heater Tank

Installation Basics

1. Turn off water heater
2. Measure water heater height and cut blanket
3. Wrap blanket around water heater a temporarily tape in place
4. Mark areas where controls are so you can cut them out
5. Install blanket
6. Turn on water heater

Difficulty: Medium
Estimated Annual Savings: $84-192
Time to complete: 1.5 hours
Overall cost: $30
Special items needed: water heater insulation blanket kit

Touch your tank!
Insulating a water heater that is warm to the touch can cut standby heat losses by 25%-45% and save you 7%-16% annually on your water heating bill.

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DIY Project: Seal air leaks with Caulk

Installation Basics
1. Clean areas to be caulked and make sure area is dry
2. Prep the caulking gun
3. Hold caulking gun and push caulk into cracks
4. Push the caulk into the crack
5. Clean up excess caulk or mistakes with a damp rag
6. Allow caulk to dry
DIY Project: Home Energy Audit

- Identify ways to save money and energy around your home
- Prioritize future home projects
- Several free online resources with varying degrees of effort
  - Energy Star Home Advisor: most user friendly
  - Home Energy Saver: most comprehensive
  - Seattle’s DIY guide pdf: most hands on
- Alternative: Professional home audit (~$150 with Xcel rebate)

Difficulty: Easy
Estimated Annual Savings: $240+
Time to complete: 1-8 hours
Overall cost: FREE!
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Overview of available Xcel efficiency and rebate programs

- Home Lighting
- Appliances
- Home Energy Efficiency (including financing)
- Heating and Cooling
- Electric Vehicles

Income qualified energy programs: free weatherization

Renewable Energy Options
# Xcel Renewable Energy Options

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable*Connect</td>
<td>Xcel Subscription Fee</td>
</tr>
<tr>
<td>Windsource</td>
<td>Xcel Subscription Fee</td>
</tr>
<tr>
<td>Solar*Rewards Community</td>
<td>Solar Garden Subscription Bill credit</td>
</tr>
<tr>
<td>Solar*Rewards</td>
<td>On-site Solar Energy offset, you own kWh</td>
</tr>
<tr>
<td>Net Metering</td>
<td>On-site Solar Energy offset, Xcel owns kWh</td>
</tr>
</tbody>
</table>

Federal residential solar investment tax credit (ITC)

- 2020: 26%
- 2021: 22%
- 2022: 0%
Xcel Energy Efficiency Programs

- 2019 Lakewood efficiency program participation
  - 4,451 program participants
  - $1.4 million in rebates

- Xcel Rebates
  - Air sealing + insulation
  - Gas Furnace, Water Heaters
  - Air conditioners and heat pumps

- Best bang for your buck programs

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
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<tbody>
<tr>
<td>Home Energy Squad</td>
<td>FREE + you get free stuff.</td>
</tr>
<tr>
<td>Refrigerator / freezer recycling</td>
<td>FREE + you get $50</td>
</tr>
<tr>
<td>Evaporative cooling</td>
<td>Low Cost + Energy Savings</td>
</tr>
</tbody>
</table>
Xcel Energy: Virtual Home Energy Squad

• Virtual contactless visit + DIY installation
• What’s included?
  • LED bulbs
  • programmable thermostat
  • weather stripping
  • energy efficient showerheads
  • faucet aerators
  • water heater insulation
• Additional option: Home Energy Squad Plus (full audit) for $150

Cost: FREE! ($200 value)
Time: 1 hour visit, 4 hour install
What you get: virtual visit, energy efficiency items delivered

Cost: FREE! ($200 value)
Time: 1 hour visit, 4 hour install
What you get: virtual visit, energy efficiency items delivered

https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates/home_energy_efficiency/home_energy_squad

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Refrigerator Recycling

- Older refrigerators can use twice as much energy as Energy Star certified ones
- Fridge savings calculator: https://www.energystar.gov/index.cfm?fuseaction=refrig.calculator
- Program overview
  - No contact pickup and recycling
  - Fridge or freezer should be fully functional
  - Call or schedule online

Cost: FREE!
Time: <1 hour
What you get: $50 rebate, free pickup and recycling, 2 free LED bulbs

https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates/equipment_and_appliances/refrigerator_recycling

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Evaporative Cooling

- Annual Savings: $224 (75% less energy compared to AC)
- How it works – ideal for Colorado
- Program details
  - Instant rebate (Home Depot) or mail in available
  - Qualifying evaporative cooler list
  - Self installation DIY or contractor (power and water source required, support brackets)
- Most economic unit is
  Bonaire Durango 4500 CFM
  - Retail: $549
  - Instant Rebate: $300
  - Cost: $249

Cost: $249+ (after rebate)
Time: 1 day
What you get: instant rebate, operating energy and cost savings

https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates/heating_and_cooling/evaporative_cooling

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Thank you and be safe!
Jeff Wong, Senior Sustainability Planner
jefwon@Lakewood.org

Next Workshops: Water Irrigation Efficiency, Local Economy

https://www.lakewood.org/SustainableWorkshop
Get Involved in Sustainability!

Find resources, view Lakewood’s Sustainability Plan, and more:
Lakewood.org/Sustainability

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