2019 Renewable Electricity Analysis for Denver Municipal Facilities

Our Goal
Denver made a commitment to using 100% renewable electricity for our facilities and operations by 2025 (Denver Public Health & Environment, 2018).

Where We Are
In 2019, 30% of Denver’s electricity use was supplied by carbon-free, renewable electricity sources.

<table>
<thead>
<tr>
<th></th>
<th>2019 Total Building Portfolio</th>
<th>General Fund Buildings</th>
<th>Non-General Fund Buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable Electricity Supplies</td>
<td>30%</td>
<td>34%</td>
<td>22%</td>
</tr>
<tr>
<td>Electricity Usage</td>
<td>111.2 GWh</td>
<td>70.3 GWh</td>
<td>40.9 GWh</td>
</tr>
</tbody>
</table>

1 This analysis does not include the airport, zoo, or streetlights.
2 GWh = Gigawatt-hour

How We Got There
Denver’s renewable electricity comes from a variety of sources:

- **Grid-Supplied Renewable Electricity**: Xcel Energy supplies electricity to its customers through the grid. The electricity comes from a mixture of renewable and non-renewable energy sources. As the grid gets greener (also known as grid decarbonization), Denver gets closer to achieving its goals. In 2019, 22% of electricity supplied by the grid came from renewable energy sources. Xcel Energy certifies this percentage through the Certified Renewable Percentage program.
  - Denver does its part to help decarbonize the grid by subscribing to community solar gardens and on-site solar projects through power purchase agreements. Denver’s participation helps decarbonize the grid for all Xcel Energy customers, in exchange for an incentive payment from Xcel Energy.

- **Additional Renewable Electricity Supplies**: Xcel Energy offers additional renewable electricity programs that allow their customers, including Denver, to directly benefit their own goals, rather than general grid decarbonization. These programs include Renewable*Connect®, Net
Metering, and Windsource®. Denver has strategically participated in these additional renewable electricity programs when the programs are available and make financial sense:

- **Renewable*Connect**: Approximately 8% of Denver’s electricity use is covered through subscriptions to Renewable*Connect.
- **Net Metering**: Denver owns a 30-kilowatt (kW) solar array on top of the Castro building and a small solar array on top of the City Park restroom building. On-site solar has otherwise not been a significant strategy towards achieving Denver’s goal due to operational and maintenance requirements.
- **Windsource**: Denver has not utilized the Windsource program to date since this program represents an ongoing price premium that does not make financial sense for Denver facilities at this time.

Denver’s participation in these programs, combined with the Certified Renewable Percentage from Xcel Energy, achieved 30% renewable electricity supplies across all buildings in 2019. Denver’s renewable electricity supplies are shown in detail in the following graphs, with the General Fund Buildings and non-General Fund Buildings shown separately.

![Electricity Supplies to General Fund Buildings (2019)](image)

*Denver subscribed to 4.8 GWh of renewable electricity through solar gardens and power purchase agreements that helped decarbonize the grid.*
Electricity Supplies to Non-General Fund Buildings (2019)
Annual Electricity Use = 40.9 GWh

- Grid-Supplied Non-Renewable Electricity, 78%
- Grid-Supplied Renewable (Certified Renewable Percentage from Denver subscriptions and projects*), 5%
- Grid-Supplied Renewable (other Certified Renewable Percentage sources), 17%
- Rooftop Solar (Denver owns Renewable Electricity Credits), 0.1%
- Renewable*Connect Subscription, 0.3%

*Denver subscribed to 2 GWh of renewable electricity through solar gardens and power purchase agreements that helped decarbonize the grid.

Electricity Supplies to All Buildings (2019)
Annual Electricity Use = 111.2 GWh

- Grid-Supplied Non-Renewable Electricity, 70%
- Grid-Supplied Renewable (Certified Renewable Percentage from Denver subscriptions and projects*), 6%
- Grid-Supplied Renewable (other Certified Renewable Percentage sources), 16%
- Rooftop Solar (Denver owns Renewable Electricity Credits), 0.03%
- Renewable*Connect Subscription, 8%

*Denver subscribed to 6.8 GWh of renewable electricity through solar gardens and power purchase agreements that helped decarbonize the grid.
Where Does Denver’s Renewable Electricity Actually Come From?

Projects that contribute to Xcel Energy's source fuel mix through Certified Renewable Percentage include those summarized in the following table and shown in the following map (Xcel Energy, 2020):

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Size (Megawatts, MW)</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronco Plains Wind Project</td>
<td>300</td>
<td>Kit Carson County</td>
</tr>
<tr>
<td>Mountain Breeze Wind Project</td>
<td>169</td>
<td>Weld County</td>
</tr>
<tr>
<td>Colorado Green Wind Project</td>
<td>162</td>
<td>Baca County</td>
</tr>
<tr>
<td>Neptune Solar Project</td>
<td>250 – solar, 125 – storage</td>
<td>Pueblo County</td>
</tr>
<tr>
<td>Thunder Wolf Solar Project</td>
<td>200 – solar, 100 – storage</td>
<td>Pueblo County</td>
</tr>
<tr>
<td>Hartsel Solar Project</td>
<td>72</td>
<td>Park County</td>
</tr>
<tr>
<td>Cheyenne Ridge Wind Project</td>
<td>500</td>
<td>Lincoln, Kit Carson, and Cheyenne counties</td>
</tr>
<tr>
<td>All community solar gardens through the Solar*Rewards Community program</td>
<td>Varies</td>
<td>Varies</td>
</tr>
<tr>
<td>All on-site solar projects through the Solar*Rewards program</td>
<td>Varies</td>
<td>Varies</td>
</tr>
</tbody>
</table>
Renewable electricity projects that contribute to voluntary, additional renewable electricity programs include:

- **Renewable Connect**: The renewable electricity comes from a 50 MW solar project near Deer Trail, CO.
- **Windsource**: The renewable electricity comes from Xcel Energy’s wind resources in Colorado, which total more than 2,200 MW (Xcel Energy, 2021).
- **Net Metering**: The renewable electricity comes from all on-site solar projects in Xcel Energy’s territory that participate in the Net Metering program.

For More Information
Visit our [website](https://www.denvergov.org) or send us an e-mail at energyoffice@denvergov.org.

References
https://www.denvergov.org/content/dam/denvergov/Portals/771/documents/EQ/80x50/80x50%20ClimatePlan_FINAL_7.16.18.pdf
