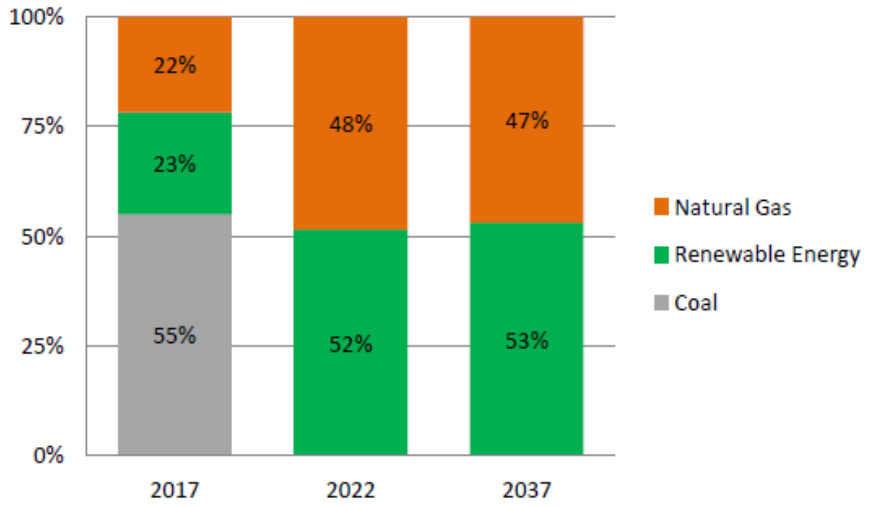
Resource Mixes from HOMER. HOMER resource optimization software was used to generate appropriate electricity resource portfolios for the municipalization options based on prioritizing cost or GHG emissions reductions, depending on what the options specified. The following information includes additional detail on the resultant resource mixes for each option, as a percentage of MWh purchased, and the size and type of power purchase agreements (PPAs) that were included. These are "snapshots" in each of three years (2017, 2022, 2037) that were generated based on the median prices18 for natural gas, wind, and carbon. All options include 10 MW of local hydroelectric capacity throughout the 20 years in addition to the PPAs described below, and assume 20 MW of local solar photovoltaics are installed in Boulder as of 2017 and remain at relatively consistent levels in the Phase Out and Low Cost options.

Importantly, these are not intended to be the exact resource mixes, PPA sizes, or local generation types that would necessarily be obtained by a local electric utility. They are reflective of types of resource packages that could be obtained at different cost commitments. The city simply cannot make firm commitments for generation at this time, and full resource planning—with substantial public input—is dependent on the utility and its governing body being created. Therefore, the results of the HOMER modeling can be viewed as either (1) generating 20-year PPAs to meet the city's electricity requirements, or (2) generating packages of resources in 5-year planning cycles that assume that a consistent supplier will provide flexibility in shifting capacity between PPAs. Once a resource was selected by HOMER for a given year, the overall purchased capacity was not decreased over time. If council proceeds with the municipalization exploration, actual prices and contracts would be compared against those that were modeled, beginning in Phase 2. Staff would also analyze options for additional localized generation, such as community-scale solar, combined heat and power, or biogas, for example.

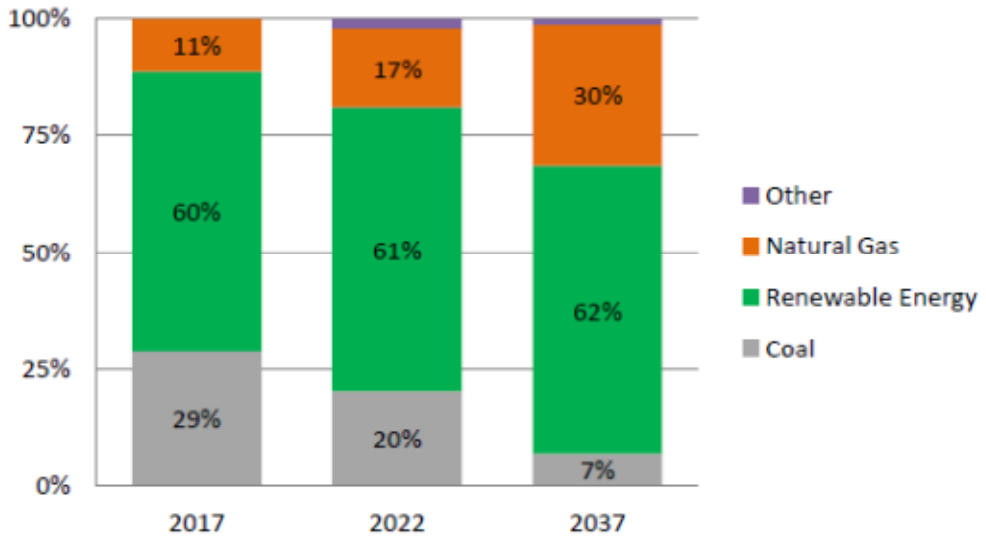
18 The median prices used in the modeling were presented in **Attachment D of the Feb. 26 study session.**

Option Charts available on subsequent pages of this document.

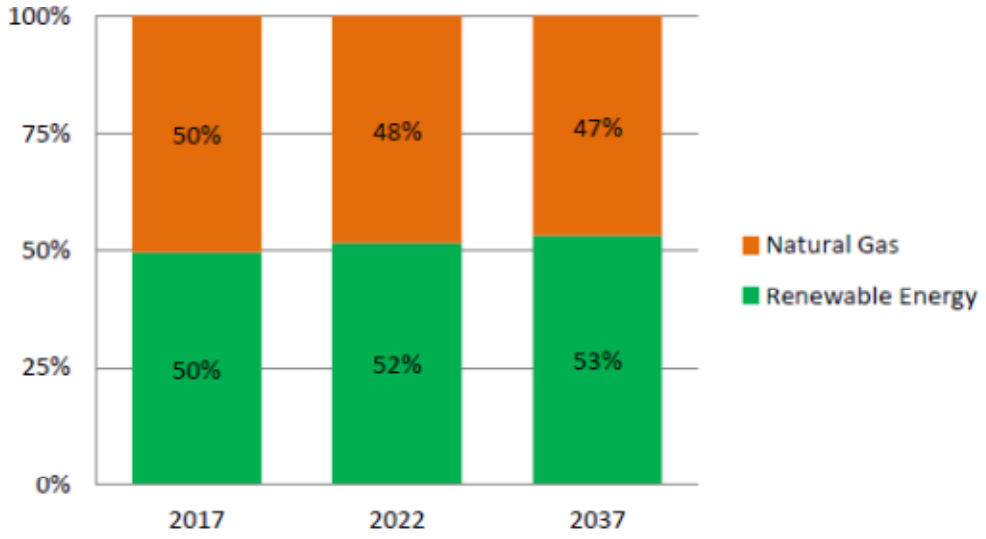
Phase Out Option
The Phase Out option is characterized by a five-year PPA with Xcel, using their anticipated resource mix, followed by transitioning to the renewable energy and natural gas resource mix used in the Low Cost, No Coal option. The specific PPAs are laid out under the Low Cost, No Coal option.



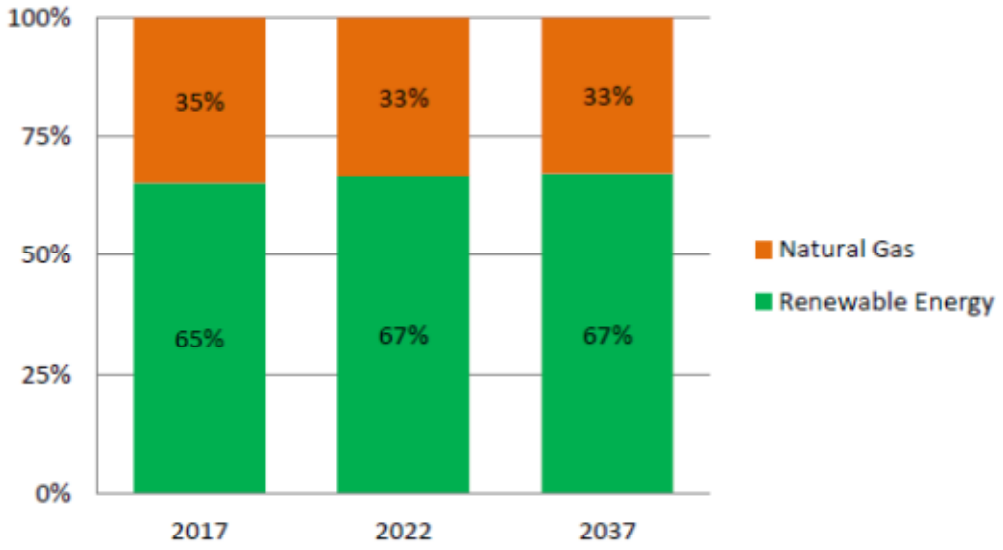
Low Cost Option
In 2017, the Low Cost option is characterized by a 198 MW wind PPA and a 250 MW natural gas PPA. In 2022, the wind PPA increases to 222 MW and the natural gas PPA to 258 MW. By 2037, the wind PPA has increased to 267 MW and 278 MW of natural gas capacity was modeled. Additionally, approximately 60,000 MWh of wholesale energy would be contracted from the market in 2017, using Xcel's forecast resource mix.



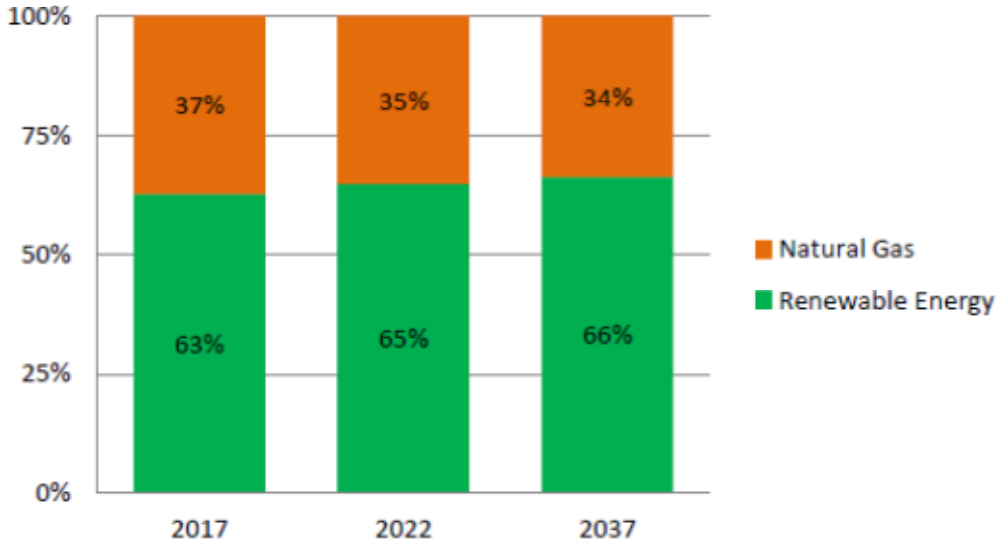
Low Cost, No Coal Option
In 2017, this option's resource mix would be characterized by a 210 MW wind PPA and 291 MW in natural gas. By 2022, the wind PPA would increase to 230 MW and natural gas to 301 MW. By 2037, the wind PPA would be 264 MW and natural gas would be 325 MW.

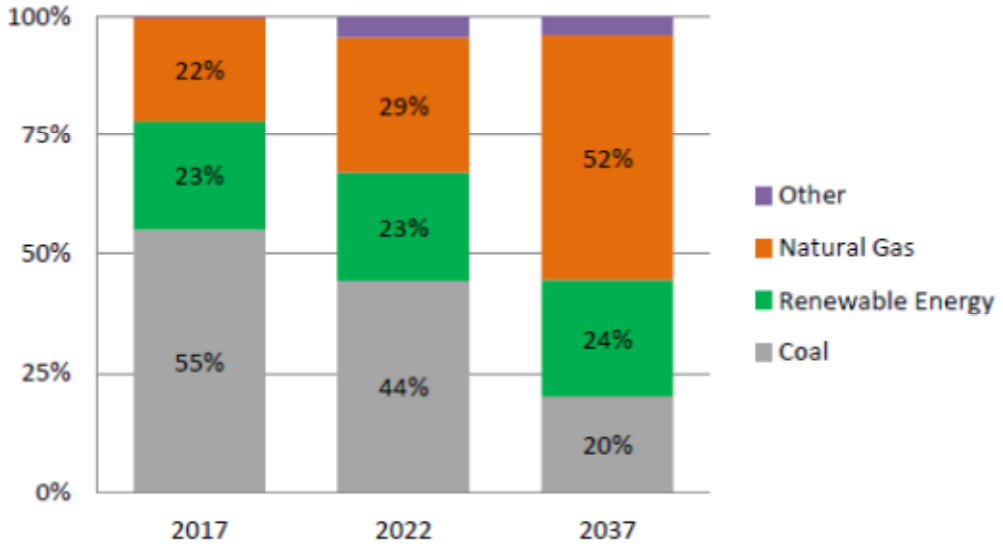


Lowest GHGs Option
In 2017, this option's resource mix would be characterized by a 429 MW wind PPA and a 291 MW natural gas PPA. The wind PPA would remain constant over 20 years, and natural gas resources would be 301 MW in 2022 and 325 MW in 2037. The 20 MW of solar resource in 2017 increases to 56 MW in 2022 and 97 MW in 2027.



Lowest GHGs, Reduce Use Option
In 2017, this option's resource mix is characterized by a 368 MW wind PPA and a 289 MW natural gas PPA. The wind PPA remains constant over 20 years, with the natural gas remaining 289 MW in 2022 and increasing to 293 MW in 2037. The 20 MW of solar resource in 2017 increases to 54 MW in 2022 and 87 MW in 2027. Smaller PPAs are required for this option because increased energy efficiency investments decrease the need to purchase additional power.



Xcel Baseline Option

This option applies Xcel's forecasts for Boulder area demand growth and its projected electricity resource mix from its 2011 ERP.